

Oral History of
Douglas Lamar Inman

Interview conducted by Laura Harkewicz

8 May 2006

and

16 May 2006

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ABSTRACT:

Douglas Lamar Inman was interviewed in his office at the Center for Coastal Studies on May 8, 2006 and May 16, 2006. Inman was born on July 7, 1920 in Guam, the Marianas Islands. He received his B.A in physics/geology in 1942 from California State University, San Diego (now San Diego State University). He received his M.S. (in 1948) and Ph.D. (in 1953) in oceanography from the University of California, Los Angeles through work he had done at Scripps Institution of Oceanography. His dissertation title was *Areal and Seasonal Variations in Beach and Nearshore Sediments at La Jolla, California*. His graduate advisor at Scripps was Francis Parker Shepard. He has been a professor of marine geology or oceanography in the University of California system/ Scripps Institution of Oceanography since 1953. He is currently a professor of oceanography at the University of California, San Diego and at the Center for Coastal Studies at Scripps. He has been involved with a variety of international organizations and projects including the Middle East Cooperative Study and teaching in Vietnam through UNESCO. He has acted as a consultant, expert witness, and arbiter on issues related to coastal oceanography. His research has focused on coastal oceanography, sediment transport, waves, effects of waves on beaches, and beach and nearshore processes. The interview focused on his experience with what he referred to as the “Sverdrup Interdisciplinary Approach” and the “Sverdrup-Revelle Tradition” and how these concepts affected the evolution of Scripps as a unique oceanographic research institution. We also discussed Inman’s personal reminiscences of Roger Revelle, his graduate student experiences at Scripps, and his efforts as a founding member of the Scripps Estates Associates. In addition, the interview included memories about Inman’s work with international scientists and his attempts to continue the Sverdrup/Revelle legacy through the Center for Coastal Studies, at which he acted as founding director from 1980 – 1987.

INTERVIEW HISTORY: The interview took place on two separate days, May 8, 2006 and May 16, 2006, in the office of Dr. Douglas Inman at the Center for Coastal Studies, which is located directly north of the Scripps pier. Inman had drawn up a list of topics that he wanted to discuss, which featured his many years as a coastal oceanographer who had studied the world’s coastlines from ships and planes as well as through diving and participation in a number of major political events. We discussed as many of the items on his list that we could under our time restrictions. During the second day of our interview, Inman’s microphone became detached for a brief time but it did not disrupt the recording of the interview.

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February 7, 2007



Douglas Inman (right) with Vice President Spiro Agnew at a press conference at Scripps, 1969.
Scripps Institution of Oceanography Archives, UC San Diego.

INTERVIEW WITH DOUGLAS INMAN: 8 May 2006

Harkewicz: ##¹ This is May 8th. I am in the office of Dr. Douglas Inman and we are checking our levels out here. Good morning, Dr. Inman.

Inman: Good morning.

Harkewicz: So, again, this is May 8th, and we are in Dr. Inman's office in the Center for Coastal Studies, and first of all I wanted to ask you, Dr. Inman, how you became interested in oceanography?

Inman: I grew up all over the world, so I knew a lot about the ocean. And in my undergraduate work, I'd been interested in geophysics and oceanography generally, but it wasn't a topic that was called oceanography then, at least not to my knowledge. And so after World War II, I had applied and been admitted to Caltech and had an advisor and an office and was all set to work at Caltech in geophysics. My advisor was Professor Buwalda.² When a friend of mine phoned up from San Diego and said, "Did you know that the Scripps Institution of Oceanography is starting the first organized classes in oceanography?" Before that, they'd always been more like a field station where graduates could come and reside and study, but never in an organized-type course and framework. I was so fascinated with this idea of working and going to Scripps that I drove down the following day from Caltech to interview. I was interviewed by Sverdrup who was the director. And since I was interested in geophysics, I was interviewed also by Francis Shepard,³ who was the geology professor here. They took me around and introduced me to others that were going to be involved, and I looked around here and I thought, "Gee, I like these guys. I like this place." [*Laugh*] And how nice it would be to be admitted here.

So I applied for admission and they assured me on that day that "Yes," I was admissible. I had a degree in geophysics, which was important. So I then went back to Caltech and apologized for all the trouble I'd put them to, and told them I was going to change my graduate studies from there down to here. And they were dumbfounded that anyone would be silly enough to go to this unknown little field station down in La Jolla and leave Caltech. So that's how I came and became a member of the first "organized" class in oceanography. It was organized in the sense that it was interdisciplinary with a full year's background in marine geology, physical oceanography, math as it applied to the ocean, and other sciences. This type of curriculum appealed to me very much. I had already, by my degree,

¹ The symbol ## indicates that the tape or a section of the tape has begun or ended. For a guide to tapes see the final page of this transcript.

² John P. Buwalda (1886 – 1954), professor of geophysics, and first chairman of the geology division, at Caltech.

³ Francis Parker Shepard (1897 – 1985), professor of submarine geology at Scripps. Shepard is known as the "father of marine geology" because he was the first to adopt marine geology as his primary scientific interest. He wrote the first text book in the field, *Submarine Geology* (New York: Harper & Row), first published in 1948.

indicated that I was interested in interdisciplinary studies. So I joined this class that was the first organized class and it was a very interesting and unique class. It was unique in the fact that many of the people in the class of sixteen members had been to Scripps during the war for training in wave forecasting either in the Army or in the Navy, or Marine Corps. I wasn't in that group, unfortunately, and it made it very difficult because they'd already had introductions to most of these subjects that we covered in the first year or two. Anyway, we'd all had commands overseas, important work in a global conflict, so we all had a much different outlook on life. We'd spent five years doing this. We were coming back now to renew our education and I think we were probably the most unique general graduating group in the whole country.

Harkewicz: That was the class of 1946?

Inman: Nineteen forty-six. World War II ended spring of that year.⁴ We were given the option then whether to stay in the military or to come back to school. I clearly opted to get out and come back to school and decided where to go—but the main thing I'm emphasizing is that throughout my career here at Scripps, I have seen year after year of classes admitted and graduated but no class ever had quite the background, the outlook, the experiences that the class I was in had. This was a very, very dynamic time in the history of the world. We set about trying to be graduate students, instead of officers in charge of something, and to some extent, that was part of the difficulty. In terms of world experience, many of the professors had far less than we.

Harkewicz: That's unusual, isn't it?

Inman: But it did make a very unique and dynamic interaction and the organization of the class was interesting because we had these requirements of going back and looking how each of these disciplines—in fact, Sverdrup clearly said that “Oceanography is a field of research to which you take the best people in all of the organized other disciplines and bring them to the ocean to study.” They had put out the book Sverdrup, Johnson, and Fleming⁵ in '42, but it had had restricted sales because they thought it would have things of value to the enemy. That was the first example of this interdisciplinary approach.

Then the next point I wish to make is that this whole concept of oceanography then caught on, and the fact that it had been so important during World War II, in all of the landing operations and so forth, wave forecasting, ocean currents, and where you can pick up downed flyers, and all of these big global concepts now were being put to a practical application. And so, this was a unique situation. I'm sure that many of us would have loved to have stayed here, and a few of us were

⁴ The War in Europe ended in the spring of 1945. The Japanese surrender, ending the War in the Pacific, was in the summer of 1945.

⁵ H. U. Sverdrup, Martin W. Johnson, and Richard H. Fleming, *The Oceans: Their Physics, Chemistry, and General Biology* (New York: Prentice Hall, Inc., 1942).

fortunate enough to have gotten to stay here. But, the point was that those who didn't then became a cadre of Sverdrup-type oceanographers, who spread out in a large global manner, and they set up departments of their own. And again, the unique thing is many of them went before they even had their degrees out of Scripps because of the demand and the need. And one of the problems that almost everyone here had was the language requirements.

Harkewicz: The foreign language requirements?

Inman: Yes. We had to be able to read and understand two additional languages, and the preferred were French, German, or Russian. In my case, I had some Spanish and I petitioned to take it on the basis that most of the Americas were Spanish, not French. And that was accepted and I passed that exam. But I hadn't had German or Russian. I certainly didn't want to tangle with the Russian alphabet. [*Laugh*]

Harkewicz: Yeah. I tried that for a quarter myself. It is pretty difficult.

Inman: So then I started to learn German and I found that a very difficult situation. And, in fact, I had a thesis that I could have used for my doctoral thesis, but I hadn't passed my German. I complained to Sverdrup one time, "I'm just not passing this exam. I think I can but..." and he said, "I think what you should do is keep taking this exam as long as we will let you. [*Laugh*] But you also keep doing your research and whatever you are working on at the time you pass your exam can become your thesis." He said, "You will then get your degree in the European mold." Which is to say, "This man not only took this subject and passed it, and has written a reputable thesis, but he's had several researches before that and this makes him a better product than the people who rush through in the U.S. system." I don't know that that helped me any but I had no option.

Harkewicz: You were forced to do it that way?

Inman: I finally got my degree in fifty-three but I'd already been teaching and working here. Some of my colleagues, Bob Reid⁶ for example, who went to Texas A&M University and set up a department of oceanography, never passed his German language requirement. He tried but finally gave it up and never did get it. Many of these people who became very famous leaders never had their doctorate because they couldn't pass all their languages.

Harkewicz: Really?

Inman: Absolutely. Now there's no language requirement.

Harkewicz: I was going to ask you about that.

⁶ Robert Osborne Reid (1921 -), distinguished professor of oceanography at Texas A & M University.

Inman: No, no language requirement. So everybody goes sailing through. But, that wasn't the way it was under Sverdrup.

Harkewicz: So officially some of these people don't have their Ph.D.s?

Inman: That's right. Bob Reid does not have his doctorate. He's an outstanding scientist and he's well known. He set up this department at Texas A&M. And then, there was a Canadian, and I'm trying to remember his name, in the same category. It was a problem of our time, which then changed a few years later when they did away with this requirement, but at the time the requirement kept us here by preventing us from getting our doctorates. But the other thing that still is remarkable is that the people who came here early and went out and set up—well for example, a student of mine, Noriyuki Nasu⁷ from Japan, who came over after the war, and then went back and set up the Department of Oceanography at the University of Tokyo. And so, you could hardly go anywhere in the world that you couldn't find someone you knew who set up a department in that place but who had their start at Scripps. You went to places where you already had colleagues, because it was such a widespread distribution of knowledge. And to my knowledge, there's nothing quite as dramatic as that anywhere in a developing science.

Harkewicz: What about people that worked at some place like Woods Hole⁸ but that didn't have the same kind of background as you? How did you interact with those people?

Inman: Well actually many of our own people went to Woods Hole.

Harkewicz: Did they? Okay.

Inman: But Woods Hole was a bit like Scripps. It was larger and it had more people but Woods Hole didn't have a graduate curriculum in oceanography and they fell behind us. And, it was Scripps people that went throughout the world because we were the people with this background and this degree, wherein the Woods Hole people were good outstanding scientists but they still had graduate students come to them, and they were a field station at which they studied. That's a very different thing than having an active curriculum. One of the important things that Sverdrup did was to say, particularly in the early days, "You can't look at this ocean and not have some background in the other aspects. If you're a geologist you need the chemistry, the physics, and all of these other things." And that's the thing that Scripps did. And so eventually, many years later, I don't know how many, Woods Hole established a curriculum more like Scripps that was associated

⁷ Noriyuki Nasu, (1924 -), professor emeritus in marine geologist at the University of Tokyo.

⁸ Woods Hole Oceanographic Institution (WHOI), located in Woods Hole, Massachusetts.

with MIT.⁹ But, we were the first and we're the people who spread out over the world, not Woods Hole, with the Sverdrup reasons interdisciplinary approach.¹⁰

Harkewicz: Okay. But, later on, when UCSD¹¹ was founded and they were hiring faculty for UCSD, the younger geochemists—you actually wrote this in your history of Scripps in the 1940s—you said that they were sort of against the whole idea of Scripps continuing the Sverdrup-type interdisciplinary curriculum and you fought to keep it.

Inman: One of the things that happened, and this was very true later on, about the time of the UCSD formation on the upper campus. People like Harmon Craig and, to some extent, Gustaf Arrhenius, and, to a minor extent, Ed Goldberg, and they came here with a very intense background, mostly geochemistry.¹² And, in my opinion, instead of saying “Yes, this is a multidisciplinary area,” they looked around at their Scripps colleagues and said, “These guys just aren't good enough in physics and chemistry.” And, “We don't want our students diluted because it takes time to learn all these things. They wanted them to get a graduate background in geochemistry, not in chemistry and not in biology and all these other subjects.” And so there was a very pronounced diversity of opinion at that time and it really split Scripps right down the middle. The opposition, I mean keeping some of the Sverdrup-type interdisciplinary approach, was headed by me, John Isaacs, Warren Wooster, and Bill Fager who is deceased but he came to Scripps as our first marine ecologist.¹³ He had come from an English . . .

Harkewicz: He went to Oxford.

Inman: Oxford, right. He went to Oxford and came here. And so there was the group on one side and another group on the other, and, at this stage, the other group didn't succeed and we did.

Harkewicz: Okay.

Inman: And so, we continued to have some of the aspects of the general interdisciplinary approach. And we still do.

Harkewicz: Now, are you talking about curriculum and education specifically, or are you talking about the way research was done as well?

⁹ Massachusetts Institute of Technology.

¹⁰ Harald Ulrik Sverdrup (1888 – 1957), oceanographer and third director of Scripps.

¹¹ University of California, San Diego.

¹² Harmon Craig (1926 – 2003), Scripps geochemist; Gustaf Olof Svante Arrhenius (1922 -), Scripps biogeochemist; Edward D. Goldberg (1921 -), professor of marine chemistry at Scripps.

¹³ John Dove Isaacs (1913 – 1980), Scripps biological oceanographer; Warren Scriver Wooster (1921 -), Scripps oceanographer, currently professor emeritus in the School of Marine Affairs, University of Washington; Edward William Fager (1917 – 1976), Scripps marine ecologist.

Inman: I'm talking about curriculum and education, but that certainly is reflected in the way research is done. I think that the important aspect that made the Sverdrup curriculum special was that you can go out and do your research, and hopefully you will be extremely well qualified in your basic discipline, but you will also have a background of knowledge about the other disciplines and how they might interact so that you will always know, "I know this and this just seems true but maybe the chemistry, or maybe the physics, or maybe the biology is going to make a vast difference." For example, biology, in particular, has been so important in geology. When we were studying currents down submarine canyons, now generally called "turbidity currents," where the sand moves along the coast and fills up the canyon head and then moves down the canyon—but we didn't know quite how or when. We had a contract to put in current meters, and we had a current meter that we placed at a—I should say in those days everything was done in feet—about 146 feet, as I recall, it was in the small U-shape of one branch of the submarine canyon. We were able to put in a solid bar across it and it was a threaded solid piece of steel about an inch in diameter. We would put that across and then tighten it into the sandstone wall so it was a rigid mount, and then hang our current meters on it. So, if you had a current going down you could measure it and begin to understand just how often there were currents. One of the first things we started finding—and I should say the current meters were various kinds, but one of them had a rotor and an arrow pointing where the current was going so you could tell whether it was up or down the canyon. After all, the canyon was only about two meters wide at the most. So, we're looking at this record and asking "What was wrong?" because here was the maximum current and the arrow was pointing cross canyon right into this solid wall on either side. "Now what's happening?" We wondered. [*Laugh*] We looked and we just couldn't believe it and we went back and took some more readings but we couldn't find what was causing it. Then, one time, we came down when the current was flowing and here was this blenny, that's a fish, a little fish, perched on top and it just moved the arrow aside and waited for the maximum currents to come and bring some food up or down the canyon. [*Laugh*]

Harkewicz: How clever.

Inman: And when the food it wanted was there it would zip down and get it. This was what was happening to our measurements, you see.

Harkewicz: Messing up your recordings?

Inman: And this was a typical interaction. You just have to be aware of all these other things, and that, by the way, is one of the things that led me to be so interested in Cousteau's scuba gear,¹⁴ something we could get underwater with and look and see what was really happening.

¹⁴ The Aqua-Lung developed in 1942 by French Canadian engineer Emile Gagnon and French oceanographer and diver Jacques Cousteau (1910 – 1997) was modified from Gagnon's demand valve for the automotive industry (with a function similar to today's carburetors). Modifications to the breathing unit included the location of the exhaust

Harkewicz: As opposed to just recording things like currents and stuff like that? Okay. Before we get too far into the future of the past, you mentioned somewhere that Roger Revelle¹⁵ was a major reason for your coming to Scripps and I wondered why that was?

Inman: I got my undergraduate degree from what is San Diego State University now, but was College then. I've been to a number of universities since, namely Harvard and MIT, and I've never had a faculty that was more informed. Many of them were Rhodes Scholars and yet this was just San Diego—in terms of students, I think the student body was twelve hundred, but look at it now. What is it, forty thousand?

Harkewicz: A lot, yes.

Inman: And, it's not the same place by any means. Excuse me, what was your question?

Harkewicz: My question was how Roger Revelle was involved with your coming to Scripps?

Inman: Oh, of course. I was interested in geology and geophysics. We had a geology organization called Delvers, run by Professor Baylor Brooks. He had asked Roger Revelle to be the evening speaker following one of Revelle's trips to the Gulf of California in 1938. Revelle gave a very interesting talk, and I was just fascinated with the guy and I had quite a chat with him later. I also met him again during the war. And then when I became aware of his connection to ONR¹⁶ and all the effort that ONR made towards oceanography and that he was also going to be here and could become the director. Even at that time, Sverdrup was looking towards the time when he could go back to Norway. Revelle was the leader and was a very dynamic person. And that's how my association with Revelle came about.

Harkewicz: I see. But, before we get off the track of the Sverdrup curriculum, what's the status of that interdisciplinary approach now?

Inman: It still exists. People are not adhering to it as rigorously as they did but there are still courses in marine geology and there are still courses in chemistry that entering students take. I'm not as active in the curriculum now as I used to be so I'm not as familiar with just how they apply it, but I have the feeling that they don't always require all of these courses. But this was always true. For example, we had a course in applied math. It was a requirement, because at that time the biologists frequently didn't have the math background that oceanography requires.

valve and adaptations to use the high pressure valves and cylinders marketed by Cousteau's company Air Liquide (originally for use in commercial and medical oxygen applications as well as flame throwers).

¹⁵ Roger Randall Dougan Revelle (1909 – 1991), Scripps director 1951 – 1964.

¹⁶ Office of Naval Research.

Actually, Walter Munk¹⁷ was one of the first teachers in applied math. As I recall he only gave me a “B” but that's . . . [Laugh]

Inman: Now it's much more common for the entering students to have a good background in math. And I think we send them to the upper campus and do other things like that now. So with the upper campus there you can fill in some of these slots that we didn't have available to us then. But, it's still a problem of looking at the student's background and what they're interested in, and then having them take some of the interdisciplinary things they should. Or, if they're weak in math send them up there. It's just that we have much more with an upper campus than we had originally.

Harkewicz: You don't have to do everything right here, now?

Inman: Yeah. In fact, I should add an interesting thing about Scripps. Scripps became an academic department when I was a graduate student. And it was associated with the closest university of the University of California system and so we got our degrees through UCLA.¹⁸ But I had never been to UCLA other than passing through. Well, I did give a lecture there. But I've never been to UCLA as a student, and even my thesis was carried up by a fellow graduate here—it had to be turned in to the library there. And when I wrote the article about Scripps in the forties,¹⁹ the biggest problem I had was trying to reconstruct the early student bodies because all of these academic records [from Scripps] were taken up to UCLA and they didn't seem to mean anything to anybody up there. Nobody can find them now. And, as far as I know, one of the biggest contributions of my paper about Scripps in the forties is simply putting down the names of people who were involved because you can't get it any other way.

Harkewicz: I see. I know that Scripps, in the past, at least, has been criticized as focusing too much on research as opposed to instruction. Do you think that Scripps has got the proper balance today?

Inman: I don't think any academic group or department ever has quite the proper balance. If it's done properly, it's progressive. Times change. Backgrounds change. And I think that any group that's really with it has to continue to change, too. And the way they do change is to say, “Hey, I think we're getting behind or we're not doing this that or the other.” You call in some outsiders and let them look at what you're doing, and they say, “You have to do this and not do that.” I think it's been a continuing situation and always will be. Other institutions teach oceanography that they actually learned here, and are now doing different things with it, well, that's just the way things go. And, I think it's the right way. The concepts that I

¹⁷ Walter Heinrich Munk (1917 -), physical oceanographer at Scripps and professor of geophysics at UCSD.

¹⁸ University of California, Los Angeles.

¹⁹ Douglas L. Inman, “Scripps in the 1940s: the Sverdrup Era.” *Oceanography: The Official Magazine of the Oceanography Society* 16 (3): 20–28 (2003). Available at: http://www.tos.org/oceanography/issues/issue_archive/16_3.html.

have talked about, of being interdisciplinary, I think that maybe one of the things you'll recognize is the fact that we went through a very interdisciplinary state with Sverdrup—that's the Sverdrup curriculum. We then went to a less emphasis on being interdisciplinary, following the new influx of people from geochemistry and other things like that. And then we would go back to this interdisciplinary state and, in fact, as I pointed out to you, we almost lost it once. But then we persevered and brought it back and I'm not even sure but what you'll still talk to people here that say, “Well, it's not doing this right and it's not doing that right.” And somewhere along the line various people will help modify it and bring it up to where it should be.

Harkewicz: So, it's a dynamic process?

Inman: It's a dynamic process. And when it quits, we will quit.

Harkewicz: Okay.

Inman: I mean quit as an outstanding institution.

Harkewicz: I wanted to ask you about being Fran Shepard's graduate student. I know he was described by someone as being “the father of marine geology.”

Inman: Fran Shepard is the father of marine geology.

Harkewicz: What was he like to be your major professor?

Inman: Well, Fran Shepard was an interesting guy. He had a lot of trouble here because he was a descriptive scientist. He helped develop the science of marine geology and he truly is the father because one of the things he insisted on was seeing what was there, “Yeah, that's there and that happens.” Up until then, there was very little observation, and particularly not in coastal things. There had been very few real observations, just generalities and far out hypotheses.

Harkewicz: I see.

Inman: And what he did, and to some extent it becomes a bit boring, but in his books, for example, he'd take you on tours around the coasts of the world and what the shelf width was here and what it was there, and what the sediment was. And to that extent, he set the necessary empirical relations upon which the science could be built. You couldn't build the science without that information. For example, back in those days the moon came from the Pacific Ocean because it seemed to have fit and how it got there wasn't exactly part of the problem. There was little data to go with it. To some extent, and this is true of all oceanography, the great expeditions of Roger Revelle and others were the expeditions that focused on “What is there?” And the greatest revolution in geology is clearly plate tectonics. It was first described in some of the papers of people from other places—well, not

quite. Bob Dietz²⁰ had a paper out on this early on and he was strictly Scripps at that time. But in general, we had lots going on but we tended to become overcome by looking and not writing. And this is something, by the way, you might look at even today. We have a “publish or perish” concept and it also involves contracts and getting money and keeping it flowing. And one of the reasons I'm going to for sure retire this time is that I'm just tired of it. And if you look at the people who have really put out the good texts they're all Brits, or Aussies. They don't have this vast funding and aren't fighting for it, since it isn't there. They sit down and write textbooks and we don't.

Harkewicz: Okay.

Inman: Getting back to your original question about Shepard, he wrote a book on what he called “submarine geology,” published in '48, and we used it from Xerox copies in 1946.²¹ They didn't have Xerox then, but hard copies that he'd multiplex and get out to us. We helped him write the book and then he put out another volume in '63 in which I added two chapters, and Goldberg added a chapter. And I think that was a turning point of really getting some real physics and mechanics into his description, but it bothered him a lot. And, in retrospect, I see what happened. He'd established all these things, and as a descriptive geologist he was the world authority. But, here you had these upstart guys, in this case Inman and Goldberg, bringing in all these “minor” details, which are called “mechanics of how things work.” And so, later on he took our chapters out of his book, [*laugh*] which made it purely descriptive again. But this tells you some of the problems. And he had problems here with others, but he is the father of marine geology in the sense that he first described what's really there. And all the rest of us have brought up and modernized and applied mechanics but we haven't done this global description—I've done global in terms of the coastlines alone but not the whole seafloor. And other people have done global in terms of the geology of the ocean basins and the plates, but he's the first one that put the whole picture descriptively in its place.

Harkewicz: But you need the mechanics and stuff that you added . . .

Inman: That's right. You couldn't do the kinds of coastal processes we're doing now. You didn't have the understanding of littoral cells and the sediment coming from the rivers and being brought down submarine canyons. You could just see a ghost of an outline at that time.

Harkewicz: I see.

Inman: And we didn't know enough about why our continental shelf was so different from the East Coast, and I think I brought that in, the fact that if you had these plates and they're all moving apart from the spreading centers, then you get interactions and what I call “collision areas,” and other places where it's trailing

²⁰ Robert Sinclair Dietz (1914 – 1995), professor of geology, Arizona State University.

²¹ Francis Parker Shepard, *Submarine Geology* (New York: Harper, 1948).

and inactive like the East Coast. Now, we begin to see why these things that he's described are as they are, and that's the big contribution.

Harkewicz: I see. But, you said he had trouble here. Is that what you mean? Because he didn't expand upon that?

Inman: I think that he didn't have enough math and physics, for colleagues of his to be happy with him.

Harkewicz: Okay.

Inman: The other thing I should emphasize is that when you got the Sverdrup curriculum and those of us who had it started discussing it and it went on a worldwide basis, that was a thing that really broke oceanography out of the rich man's mold and into a science. Before that, oceanography existed. In fact, Hirohito²² was an oceanographer, and the Prince of Monaco²³ was an oceanographer. You can see what I'm saying. These were the oceanographers and the money for oceanography was sort of a pet project of some ruler somewhere. It wasn't a general science. World War II suddenly made this play toy of rich people into a basic science. And when Shepard came in, he wasn't involved with the physics and chemistry and the math necessary. But he was a very good descriptive scientist and he did a very valuable series of things. But his colleagues say "Ah, I can't really talk to this guy. He just doesn't seem to understand what I'm talking about." [*Laugh*]

Harkewicz: That makes sense. But I want to ask, before I forget, you talked about the "publish and perish" idea and I want to understand what you meant. You said—okay, what did you say? You said something about funding and trying to find funding, and you said something about the publish and perish type mentality?

Inman: Okay. The funding is there but you have to apply for it. In order to apply for it, you have to have a program and you have to put in a proposal. "I want to do thus and so." And in oceanography, invariably, it involves funding partly a ship or someplace to go and look at something. A lot of my life's been spent on coastlines in the Middle East, China, you name it, and in order to get there you really have to do a lot of planning because you need to ask for the right amounts of money. You can get this money, but you have to spend time verifying why you want it and what you want to do with it. Furthermore, if you're going to really work on it, you have to have graduate students of some kind and you have to have some idea who's going to be there or how this is progressing. So, what we find ourselves being are research administrators. We teach and do other things, but we're really administering this vast complex which every year gets more and more difficult with more and more forms to fill out. In addition, you need to publish or perish and you have graduate students and they need to publish to get well known

²² Emperor Shōwa, better known as, Hirohito (1901 – 1989), 124th Emperor of Japan reigning from 1926 – 1989.

²³ Albert Honoré Charles Grimaldi (1848 – 1922), reigning Prince of Monaco from September 1889 – June 1922.

and be placed. So you can't be a senior author. And if you're always a junior author and not doing another separate paper on the side how do you get to continue your ability to be a senior scientist? And this isn't the way it was initially.

Harkewicz: I understand.

Inman: It wasn't that way initially because when World War II ended you had a situation where the country suddenly had no basic science support. And who supported it? Guys like Roger Revelle and the Office of Naval Research had seen this coming. They had always been supportive of basic research. But at that time you had a country suddenly without a reason to support all these people. Universities were without it. We had no NSF, nothing like that, and how was it going to go? Who was supporting it? The Office of Naval Research. And furthermore, when we wanted to go somewhere that required airplanes, who supported it? The military. They had MATs, Military Air Transport. And if I wanted to go to England and talk to the Bagnold,²⁴ which I did, I just phoned up somebody and said, "Hey, I need to go to England." Well, it isn't the nicest way to travel, in military air transport, and they don't have trays of food and all the rest of the things you'd like, but heck, you got there. And you could get there and you didn't have to write a great justification. You just let them know that it was important to your research to go there. And I was traveling MATs almost entirely up until at least 1960 when they finally phased it out due to the fact that the American airlines groups were saying, "Hey look, all these people ought to be buying tickets and supporting our commercial airlines." So it was a very different situation. In fact, if you look at something like the CalCOFI Program²⁵ here at Scripps, which is very important and the oldest detailed look at what's really happening in the coastal ocean waters, who supported it initially? The Office of Naval Research. Who supplied the billets to go on it? The Office of Naval Research. And, without that we wouldn't have been doing it. And who was behind it? Roger Revelle. And initially, and how was Scripps funded? Through someone like Roger Revelle or Sverdrup who broke it down and handed you your money. You didn't sit there and write proposals. You just had a meeting and decided how to divide up what this pot of money should support. It was a totally different

²⁴ Ralph Alger Bagnold (1896 – 1990), founder and first commander of the British Army's Long Range Desert Group during World War II. Bagnold laid the foundations for research into sand transport by wind. After the War, he expanded his research into water-borne sand.

²⁵ CalCOFI, California Cooperative Oceanic Fisheries Investigation, was established in 1949 in order to research the causes of the failure of the Pacific sardine fishery off California and Mexico. The CalCOFI consortium is composed of the California Department of Fish and Game, the Coastal Fisheries Resources Division (now known as the Fisheries Resources Division) of the Southwest Fisheries Science Center (National Marine Fisheries Service) and the Marine Life Research Group of SIO. Since its founding, the central theme of CalCOFI has been to conduct cooperative biological oceanographic surveys measuring the biological, physical and chemical characteristics of the California Current area. The CalCOFI measurements are the longest and most complete time series of oceanographic and ichthyoplankton data in the world. In May 1997, the CalCOFI data base was recognized as a national science treasure by a peer review panel of distinguished scientists.

funding situation and you could spend much more of your time doing actual research, writing it up, and publishing. Now . . .##

Harkewicz: ## Okay. So you were talking about funding through ONR in the past...

Inman: And publishing.

Harkewicz: And publishing.

Inman: And as it stands now, more or less, you have to go through all this bureaucratic detail of getting the funding. It's there, and better than any other country in the world, but it takes a lot of your time. And that's why I said you're really an academic administrator. And then if you teach a course you get a student involved with it, and the student puts out a thesis on this subject and that can constitute publishing the research, but now you have all these other students coming up and they need to do something else and you quick have to get some more funds. And do you sit there and really work up the details in a relaxed overall situation? You never have that time. Almost every one of us who's retiring now could sit down, if we had the data backgrounds at our fingertips again, and start writing some really detailed valuable text that we just don't have time to do under this publish or perish system and the fact that every year the bureaucracy requires a whole new set of forms for you to sit here and fill out. I've been working at home much of my life and if I hadn't worked at home I wouldn't have any publications because you can't come down here—I enjoy talking to you, for example, this is the sort of thing we do best. But we don't ever have a chance to sit there and think, check, do the calculations, look up what's necessary, come back and write a really scholarly piece of research. It doesn't happen. Furthermore the research, there's so many people publishing that they limit you to just a few pages. So they're only publishing abstracts. They don't need to know the subject in depth. Although, they would like to have you have the depth in some other digital form that's available, and we try to do that, but you can see the mess we're in. We no longer publish scholarly papers. We're publishing scholarly abstracts.

Harkewicz: Hmm. That's kind of sad. But what caused this change? Was it problems with military funding or something?

Inman: No. No. The military funding was a carryover and a holdover until the United States could finally get a National Science Foundation and get all these other things. Then Congress actually said, “Military, back off. We have other support,” and partly that's it. ONR didn't require the proposal detail that NSF does now. Furthermore, we don't have the same ONR support that we had because Congress has said, “There has to be a military justification for military support.” Well, guess what? One of Roger Revelle's guiding principles was, “Oceanography is important to the Navy because it has to understand and know the best marine ocean science available. So anything you do in the ocean is of

fundamental importance to the Navy, whether it's sound, whether it's sight, whether it's transmission, whatever. That's important. And, if the guy is writing this proposal to justify a limited Navy solution to something, turn it down. What we need is basic science.” So, to that extent we had a situation where ONR supported basic science with a minimum of requirements, and “Here's what I plan to do,” just so they know what you're going to do and where you are and how—but if you're doing it under NSF, and let's face it, how many of the applications for funds that NSF receives do they fund? I don't remember the statistics, but very few. Every one of these required hours, days, months, and years background, and yet they're turned down. So, everyone's scrambling and this is the publish or perish thing.

Harkewicz: What was it that caused this—changes in society?

Inman: Absolutely. We're now a society that requires so many laws and forms for everything we do that you and I and everybody else spend much more time filling out detailed bureaucratic things than we ever did in the history of the world.
[*Laugh*]

Harkewicz: Okay.

Inman: It's getting worse and it's one of the big worries in this country. Look at the university where we know the most about it. I got this building on \$48,000, which needed minor capital improvements instead of major. It used to be the old saltwater conversion facility. We did it ourselves. Everything had been gung-ho, do-it-yourself at that time. You can't do that now. And furthermore, if you look at the office, our business office, which Jennifer²⁶ runs. At that time, we had offices around this central area. The central area was all charts and tables to work on so we all worked in the middle and had offices around it. And downstairs the same way. Now, we've had to subdivide up here. And who's in here? Business people. We have no more scientists than we had back when I got this building in '73. Same number of offices, the same number of scientists, but we've filled in the inner section with business people. There are as many business people here now as there are scientists. And the law requires them to keep their records subject to audit anytime in the next five years. And so what's happened to our scientific storage? It's taken up to places anywhere else but here—Mount Soledad, anywhere, science is way out in the outskirts. Camp Elliot, you name it.²⁷ That's where the science records are stored. The business records are stored right here.

Harkewicz: That's because of all of the legal requirements?

²⁶ Jennifer Davis, management services officer, Integrative Oceanography Division and Center for Marine Biotechnology and Biomedicine.

²⁷ Camp Elliot was a Marine Corps facility used during World War II. The communities of Tierrasanta and East Elliot, suburbs of San Diego, along with Mission Trails Regional Park currently comprise part of the former Camp Elliot. Mount Soledad is an 822-foot hill that serves as a prominent landmark between Interstate 5 and the Pacific Ocean.

- Inman:** Yeah. I think Jennifer's done a marvelous job, but the fact is that we now have more business people than scientists.
- Harkewicz:** Okay.
- Inman:** So what's wrong with our society? Something is.
- Harkewicz:** Too much paper?
- Inman:** Absolutely.
- Harkewicz:** Well, let's back up to when you first came here, for a minute, because I wanted to get a little bit of background on the social climate here at Scripps.
- Inman:** Oh, I'd love to talk about that.
- Harkewicz:** I know that, I mean you wrote about the Torrey Pines Housing Project?
- Inman:** Okay. Well, I can tell you about how we got there.
- Harkewicz:** Good. And about the Scripps Estates Association?
- Inman:** Yes. But maybe I should first tell you about Scripps because a lot of it had to do with what was happening at Scripps. In the early days at Scripps, we had a class of sixteen students. Think of it now. You multiply that by ten and then you still have a small number. [*Laugh*] At that time, there were only sixteen.
- Harkewicz:** That's amazing.
- Inman:** And the professors here were what, eight? [*Laugh*] So, we had a small group and it was Sverdrup's procedure that every Wednesday noon, we had a talk that was given and everybody came, students, professors, and any technicians, or whoever wanted. It was an open society to discuss what was going on. And since we were the prominent oceanographic institution we also had speakers from all over—as hard as San Diego was to get to, they'd still come here. Every week we'd have somebody who was bringing some information from the world, and we met as a group. It was a community working in a much smaller area, just because of the numbers. Now, if you look at a thousand scientists and god knows how many business and other people here and ask, “How do you meet?” You can't. What happens is that you have individual groups, geological sciences, chemists, and climate scientists. And of course, science is expanding. You have all these different things you didn't have then. The feeling of being at Scripps in a small group and being a part of this fascinating dynamic small group is gone. It doesn't exist anymore.

Harkewicz: Do you think that was just the nature of growth or do you think that people don't work at trying to have that kind of interaction anymore?

Inman: Oh no. I think most people would rather have, or at least I would rather have had the one we had. I think it's a damning thing about things that expand. The country's population is expanding. I don't know the solutions. I'm not that kind of scientist. But, it's a very difficult problem that we're facing, all the way from the demographics of one kind or another, and the number of family problems. Some things have improved vastly. I was noticing that there are now universities where the hiring of husband and wife teams are more common. And there are universities that have a spousal appointment in some other field. Some things are changing for the better and that's one of them. Many of the things that have happened to us are just to with an increase in population, and the expansion of science. Somewhere there has to be a leveling off. It's just too complicated. Now you're asking about SEA²⁸ and that's a very important thing. Go back to the concept that I told you about. We were a very different entering class. We'd had responsibilities and we'd seen things, and done things—and I guess we all had the general feeling “If we can win a world war we ought to be able to find some housing.”

Harkewicz: That makes sense.

Inman: You'd think.

Harkewicz: Did many of you have families at the time?

Inman: Oh, almost all of us did. And, in fact, without the Torrey Pines Housing Project, which had just gone out of military, and was up there where UCSD is now—it's partly in the Torrey Pines Housing Project and partly in the old Marine Corps rifle range, Camp Callan²⁹ area. But anyway, at that time, they decreased the military presence here and there was a rapid shutdown of military facilities. From a full-going war to a military staff hardly large enough to carry on activities. We went from there to here in a very, very short period of time. And to some extent we were all just tired of this damn thing. We wanted to get back to being people again and not doing what we were doing. So our families lived in the Torrey Pines Housing Project. I walked to Scripps. I loved working at Scripps and most of us did but I think all of us were aware that some of us would be able to stay here and some wouldn't. None of us could afford to live in La Jolla. And in fact,

²⁸ Scripps Estates Associates was a cooperative real estate venture originating in the fifties with members of the Scripps community who were in search of affordable housing near the institution. For more information see John A. Knauss, “Scripps Estate Associates—The Early History,” 2001. Biographical Information Files, SIO Archives, UCSD.

²⁹ Camp Callan was leased from the City of San Diego by the U.S. Army and opened in 1941 as an anti-aircraft artillery replacement training center. It extended from the southernmost boundaries of Torrey Pines State Park towards what is now the Muir Campus of UCSD. Camp Callan closed in 1945. In addition to the state park and part of the university, one of the nation's premier municipal golf courses—Torrey Pines, which annually hosts the Buick Classic—is located on land that was the former Camp Callan.

if you happened to be the wrong ethnic background, like Jewish, you couldn't even buy a house in La Jolla. So everything wasn't good in those days.

I started the group—my thinking was, “I hope they'll keep me here, and if they do I want to work here but I don't want to live in the back county somewhere and drive.” Even then it was a big problem. In fact, the driving has always been difficult because there were fewer roads so it was just two-lane highways. It's still the same damn problem. So I had the idea that we would try to get some housing, some land that we could work with. And the first idea I had was to contact the city, who owned the Pueblo lots up here, on which UCSD now sits. And in those days we had a little more clout, as graduate students, than people do now. There just weren't as many of us. The country was thankful we'd done what we did. We weren't totally without some appreciation. And so we graduate student veterans went to the city and they were willing to lease us some lots. It happened to be above the shores. That was the city of San Diego and the planning group at San Diego. It went fine until the real estate lobby heard about it. And when the real estate lobby heard about it, who-a-wee. You know, here we were, these people in their hovels. [Laugh] So the city was under such great pressure—and I know about this because they came to me. I was the leader of the group and they said, “We are sorry. We would love to see you veterans have this, but we can't—I mean, from the mayor on down, it just isn't a go. No way can La Jolla have veterans developing property.”

So I learned that lesson and I thought, “This isn't going to work.” I had been walking down through this area every day, an area that SEA now occupies. Originally, Ellen Browning Scripps³⁰ had arranged that any of the Scripps faculty or scientists who wanted to could get an acre of land. And it turns out only three people took her up on this, because it was so distant out here. You had to come all the way out to the end of the trolley car line, and then still you were several miles from Scripps. [Laugh] And Scripps was then on the road to Los Angeles, this little lane that went up, not the one that you drive on today. And so I got this idea. I knew Helen Raitt, who was Russ Raitt's wife, and she had La Jolla associations.³¹ And this again comes back to the fact that if you have social associations you do know more about what's going on. And she told me about this land that she understood that Poole³² might have up for sale but she didn't know whether we could really move it to that point. Poole was a developer. In fact, Poole Street is named after him.

³⁰ Ellen Browning Scripps (1836 – 1932). In 1903, Ms. Scripps and her half-brother E.W. Scripps joined to found and endow a marine station for biological research that eventually became Scripps Institution of Oceanography.

³¹ Helen Hill Raitt (1905 – 1976), author of a number of books related to SIO including: *Exploring the Deep Pacific* (New York: W. W. Norton & Company, Inc., 1956) and (with Beatrice Moulton) *Scripps Institution of Oceanography: First Fifty Years* (Anderson, Ritchie & Simon, 1967); Russell Watson Raitt (1907 – 1995), marine field geophysicist and professor of geophysics at SIO.

³² John H. Poole (1917 – 2003), founder of radio stations KBIG – AM and FM, Los Angeles, television channel 22, and Mount Palomar Winery in Temecula, CA.

I had learned my lesson that we graduate students just didn't have the clout so I went to Roger Revelle. And Roger said, "I would like to see some kind of housing setup because if we expand we're going to need it and your situation isn't unique." So we made a crash program and this time I actually woke up to the fact that I wasn't the guy that was going to impress any of these people, *[laugh]* but Roger Revelle quite possibly could. And Helen Raitt, who was known in local society, could. And then we had to have somebody who worked here, and the youngest and brightest faculty member was Walter Munk. So I selected the three of them, with their help, and we started a campaign to see if we could buy this section of land. The first thing we did, through Helen and Roger's aid, was to get the dean of architecture down from Berkeley, William Wurster,³³ and he came and looked at the land and gave us a lot of help. I started a survey of the land we wanted, because there weren't good surveys. We graduate students surveyed it and worked it up, then started marking lots and so forth, and had the idea if we had Sumner Canyon, which was a nice beautiful canyon and had lots on the rim of it with Ellentown Road in the middle. We got Roger Revelle, Helen Raitt, and Walter Munk to go visit Poole with our plan. He was then mostly living in Santa Catalina but he also came back and forth as a business man. The deal they presented was that "We want this to be a university sort of thing where professional families reside. We want to save the canyon as a reserve. And you can keep the oceanfront lots"—so he decided to keep the seaward end of his land and we bought the rest.

Harkewicz: Poole would get the seafront lots?

Inman: Poole did. His land would actually be under our guidelines. He shook hands with Roger Revelle. He signed his name on our plan and came back. And the very next day the real estate lobby learned about this and a delegation of them went to see Poole and they said, "This is ridiculous." And Poole said, "Well, I gave my word. I gave my hand. I'm going to do it." And he did. And so here we were with land to develop. So we formed what we called "Scripps Estates Associates," just to have the acronym "SEA." And so what we did was to form a nonprofit corporation to develop the land and sell it back to members for cost. And it worked, but only with five years of really hard fighting against the real estate lobby. Everything we did they objected to. Every single thing. I can give you two examples. We didn't have a square footage requirement, you didn't have to build a mansion. In the first place, many of our lots were half-acre, which are big lots. But we didn't require that this half acre have a big 4,000 or 5,000 square foot place on it because we were people of modest means and also we didn't need all this. They took us to city council again and the city council listened to what we had and what they had and voted on our side. So, okay, we didn't have to have the square footage. The next thing we did, as the street came along Ellentown Road, and the main view was out, down the canyon, and towards the ocean and we didn't want people to have to view the ocean across their neighbor's backyard.

³³ William Wilson Wurster (1895 – 1973), professor of architecture, emeritus, and dean of the College of Environmental Design, emeritus, at the University of California, Berkeley.

So, what we did is in certain places, the lots would be rectangular while others were more like a parallelogram, so that you'd be looking over your own yard and not your neighbor's yard. The lots were laid out as a simple parallelogram rather than a rectangular. Okay, they took us to task for that, “undue complex boundaries.” And again, we had to go down and—oh, and I should have mentioned this. It is one of the really wonderful sights I'll never forget—this is going back to the square footage issue. They wanted us to have big lots and on our big lots they wanted a lot of big houses. Mainly, they were people down here on the shores. So Roger Revelle went down there and he was a six-foot three or four guy. He was big. And, he went down and he started pacing off the size houses these guys who were doing the objecting had. So here's this guy pacing off the house size. Not exact, but approximate, with dogs barking at him, and people were annoyed with him. He got his statistics, and we took them down to the city council and showed them again and said, “These people that are squawking about this they don't have houses this size.” And so, we got the square footage requirement killed. But it took five years and we finally did. One of the reasons we named our street “Ellentown Road” was the simple fact that many years before, if the Scripps family had still owned the property, Ellen Browning Scripps would have *given* it to us. And so that's how it came about. It's still there, but it still has vast problems.

Harkewicz: How so?

Inman: Well, my wife, Patricia Masters,³⁴ organized and edited a report that's called *Scripps Estates Associates: Our First Fifty Years*, and . . .

Harkewicz: Go ahead. I'm listening.

Inman: It was of interest to the La Jolla Historical Society and to the San Diego Historical Society because it pointed out that we were the first people to set aside a portion of an ocean canyon as a natural reserve and we were the first people to break the ethnic barrier, and all the rest of these things. She put this out in 2001 and then out of the blue something called SOHO,³⁵ S-O-H-O—they're a group that look at the historic preservation. But her paper had nothing to do with historic preservation but rather with the fact that this is what we did.

Harkewicz: A story about how you needed a place to live?

Inman: We needed a place to live. That group gives an annual award, and who did they give it to but Patricia Masters, because she organized and edited this.

³⁴ Patricia M. Masters, anthropologist, biologist, and independent archaeologist; formerly associated with Scripps. In 2006, Masters was awarded the “Mid-Century Memories Award” by the San Diego group Save Our Heritage Organization, for her history of SEA: Patricia M. Masters, *Scripps Estates Associates: Our First Fifty Years, 1951 – 2001* (La Jolla: Scripps Estates Associates, 2001).

³⁵ Save Our Heritage Organization, a nonprofit preservation organization interested in the heritage of the communities of San Diego.

Harkewicz: Great.

Inman: You'd think so. But, it's caused another split right down SEA. One of the problems that has happened as the people died off up there, like Helen and Russ Raitt died and so their place came up for sale, and other places. We actually didn't have it just as Scripps academic housing because we had guys like Fleming,³⁶ who's led the Torrey Pines Reserve. He was State Superintendent of Parks, at one time, and then retired to live on our place. So, we had a lot of people of this kind. And I should point out that our lots were costing us a few thousand dollars at the most, rather than a few hundred thousand.

Harkewicz: Because the whole group owned them?

Inman: Yeah, because it was a nonprofit organization, it belonged to the group. But as these people die off their houses and land are valuable. So now they sell and there is a new population of people coming in who are no longer academic, no longer really interested in preservation, and there's also the thought that if you want to keep the house on the lot, making it an historical designation makes it more valuable, but if you want to level it and build a mansion then you can't. It makes it more difficult. And these people don't have the same values that we academics have. They're different. When Pat got the award they said, "You're trying to make an historical group out of us." She had nothing to do with this award. She simply got an award for doing something five years ago. But, the group up there didn't see it that way. They said, "She's pushing this this way because she got an award from SOHO."

Harkewicz: I see. So, when SEA originally was formed, did you have limitations as to what people could do on the land?

Inman: We had architectural control. The thing we didn't do is to put a minimum area on the house because, as I said, some people want a small house, some people are just a couple and others have large families or want to plan for them. So, there's different-sized needs within the academic community. And since we're all going to live up here, we should have lots large enough but not put this size requirement on them. I should say that they were designed by the best designers—we had a lot of help from people like the Green Dragon Colony.³⁷ Eight of us got Russell Forester.³⁸

Harkewicz: Forester?

³⁶ Guy Fleming (1884 – 1960), one time superintendent of the California state parks.

³⁷ The Green Dragon Colony was established in 1893 in La Jolla by German-born Anna Held Heinrich as an artists' retreat and vacation spot. It is now a collection of galleries and boutiques.

³⁸ Russell Forester (1920 – 2002), architect. For more interest on Forester and the projects he designed see: <http://www.modernsandiego.com/Forester.html>.

Inman: Russell became a very famous person, artist as well as designer, and he designed eight of our houses. So these were nicely done houses. But if you really want a mansion and it happens not to be a mansion, if you're looking for four or five thousand square foot and this is only a thousand, then you want to level it and sell it. And in order to do that you have to be able to level it and that's what they're after. Because now the area's broken down into real estate agents rather than neighbors. It's just sort of heartbreaking, but there it is.

Harkewicz: So when people buy a house now, do they still become part of the Scripps Estates Association?

Inman: No. They have to be invited to join.

Harkewicz: So, you can't just go ahead and sell your house? You have to . . .

Inman: No. We can sell our house on the open market. That's the problem. But the open market now makes the value of these houses on the canyon up into the millions, just for the land, the house on it is beside the point. They want to level it and build something else. You have a group up there who are not the original academic people. This is a vast change in values. Money is the governing thing now, not preservation. Why is the change coming? Academics can't afford to pay millions of dollars for a lot and then turn around and build a \$10 million home on it. We're just living in such a choice place. It's like I've told my wife many times. We could be well-to-do if we wanted to sell out and leave. But, if you want to stay here and be in this area then you're facing this problem. It's a problem of the difference in values of people who are residents up there now. And it's just beginning.

Harkewicz: Do you feel friction on a day-to-day basis with people one-to-one, or is it mostly on paper?

Inman: I think it's mostly on paper at the moment, but email being what it is, it's flourishing up there. And, unfortunately, it's just beginning. As I see the future, it's not going to get better.

Harkewicz: Oh, that's too bad.

Inman: Well, let's go back to my item number two.³⁹

Harkewicz: Your item number two? Diving with Jacques Cousteau? Do you want to talk about the aqualung?

Inman: It's a very popular sports thing to do now. It's worldwide. And it turns out that this self-contained breathing apparatus was not a U.S. invention. It was a French-

³⁹ Inman had a list of things that he wanted to discuss, which he shared with me.

Italian one. Jacques Cousteau is one of the guys who invented it.⁴⁰ And so you might say, “So what?” Okay. Well, he decided to commercialize it and went an additional step from having it be a military tool to becoming a general tool and his patent was on something called the “Aqualung.” It was something so you could get air underwater and it would give it to you at the right pressure. It was a neat little thing but there was no system developed to handle it. Fran Shepard was not only just a well known geologist but his father owned the Shepard Shipping Line, and he did his thesis on his father's yacht—back in the days when oceanography was a gentleman's thing. But anyway, he was a friend of Jacques Cousteau's, or they were at least acquaintances. So, when Jacques Cousteau wanted to promote his system he came here. As I recall, it was early in '47 or '48 and he had this thing, an air container he could pump full of air and use with some way of strapping it to your back. At that time, we didn't have wet suits or anything. By the way, the wetsuit was developed here by Hugh Bradner.⁴¹ If you wanted to stay down very long you had to climb in one of these “dry suits.” [*Laugh*] They always leaked so they were never dry.

Harkewicz: Yes. I can understand that.

Inman: So when your suit filled up with cold water, well then you'd had it.

Harkewicz: The diving was over for the day?

Inman: Well, Cousteau brought them here and the basic problem is we have up-welled water and it's cool, but nevertheless it was a real breakthrough. Before that, Shepard had hired hard-hat divers and we would put the ship, or a diving vehicle in the water in the canyon heads and we'd send down this hard hat diver to a couple hundred feet or so, and then bring him back up. That was part of Shepard's science requirement. You had to know what was down there. So, Cousteau came along and he left two of his brand new aqualungs and tanks with Shepard—he had heard that Shepard was studying submarine canyon heads and this was an ideal way to do it. And so here we were with these two gadgets. I remember my first experience. We used them out here off the pier. We had no electricity out there and in those days we had a big hand winch to bring our little boats up or down. It was quite a different matter than it is now. But in any event, Shepard was doing a lot of small boat operations, and he had a sediment trap, which was actually made from women's nylon stockings. It turned out that the foot part of the sock would trap the sediment, and then if you'd cut it off at about the ankle and put it around a metal ring, then as the waves would pick up the sediment and flow through, the sock would wrap around in the reverse motion and empty it. It was quite a novel idea in a way. So we had this sediment trap made out of ladies stockings. [*Laugh*]

⁴⁰ See footnote #14 for more information.

⁴¹ Hugh Bradner (1916-), Manhattan Project veteran and physics professor at Scripps. Bradner invented the first wet suit for use by Navy frogmen in 1951.

We had these traps out there and I got so fascinated watching them at just a shallow depth like twenty feet that I wasn't really noticing my ears under more pressure because I hadn't properly cleared them, but when I came up I realized I was in some kind of trouble because I had this intense pressure in my ear and I had to go to the doctor. So I learned right away that this is not something to play with. You need to know more about it. We here at Scripps developed all of the diving tables and everything else for scuba. In fact, I can remember one of my chores, it might be someplace like Israel or somewhere like that, was to take over our diving handbooks and tables and get them started. We passed this scientific tool around the world. In fact, I ran a diving group up until a few years ago when I got a little old for it. I have dived for at least fifty years of my scientific career.

Harkewicz: Wow.

Inman: And well, my career at Scripps is now at sixty years. I came here in '46. I've been here ever since, and it's 2006. So, I guess that counts?

Harkewicz: Yup. Sixty years.

Inman: Anyway I've had a long association. My association is probably one of the longest of anyone here except Walter Munk, who was here a couple of years before me.

Harkewicz: Do you think that there are types of science that couldn't have been done without scuba?

Inman: Sure. All the deep sea stuff, of course, was done without scuba, but scuba's been a wonderful tool for the shallow water and it's been a wonderful thing for studying what's happening in my studies of the formation of ripples by wave action, the studies of sediment transport. Most of them would not have been possible without scuba. And we have fun just doing it. It was a fun thing to do. And for example, there's an old LCM⁴² that sunk off the Cove, north of Point La Jolla, in about eighty feet of water. We used land ranges to find it at sea. You could line up one land mark on another, and if you go offshore far enough and get a cross range you could find yourself visually. But at this particular position, in eighty feet of water off the coast, we could not find any good cross ranges. So, we'd go to the nearest one we had. We'd dive down to eighty feet, then we'd take a wrench or any kind of metal tool and tap and bang on our tanks, then we'd start looking. Pretty soon you'd see fish coming. They're very curious. And, when they came and saw us, they'd zip around and go back and we'd follow them because they returned to this wreck. They lived there. So, we could refind it.

Harkewicz: Very interesting.

⁴² Landing Craft, Mechanized—intended primarily for the transport of cargo and/or personnel from ship-to-ship. The design of the boat permits its transport on other ships.

Inman: We always found the wreck that way.

Harkewicz: That's interesting. I think some of the work you did related to atomic bomb testing?

Inman: The only work I did with atomic energy was for sediment transport tracing. I didn't do any of the big bomb things. That was big ship expeditions.

Harkewicz: Okay. I apologize.

Inman: No, it's no problem at all. In fact, I can tell you about our involvement, which was somewhat different and was with Ed Goldberg. We decided that the problem with measuring sand is that if you want to find out how fast it's moving and where, and since it all looks alike, you have to tag it some way. And one of the ways of tagging it was with radioactivity. So Ed Goldberg had me collect a series of samples. We sent one of them, about a mayonnaise jar full, back to Oak Ridge, Tennessee,⁴³ had it irradiated, brought it back and then opened it up to analyze the radioactive change, and we found a very interesting thing. The quartz grains would have apatite inclusions,⁴⁴ teeny ones that you couldn't really see with your eye without a microscope. But, when these apatite inclusions were irradiated and you got a beta response that you could count⁴⁵. This turned out to be a fairly low level. But then, when we wrote our paper describing it as a tagging system, the Atomic Energy Commission said, "First you have to have an exposure badge,⁴⁶ next you have to have a full physical every month, and that includes a full chest x-ray." And I thought, and Ed said too, "Gees. We're going to get more radiation than we can stand not from the radioactive sediment but from . . ."

Harkewicz: But from the x-rays?

Inman: X-rays. And so we had to give up that procedure. Then we went to another system, which has been the universal one since then. We found that if you take this sand up to the company that makes ornamental fishbowl sand, they would die it and it fluoresce under ultraviolet light. This kind of sand made the fishbowl look nicer, especially if you add dark lights, but it's not radioactive. The fluorescence is something that would show up in the dark. So we would take, in

⁴³ Oak Ridge National Laboratory (ORNL) was established in 1943 as the Clinton facility, as part of the Manhattan Project in order to establish a method for producing and separating plutonium for atomic weapons. After the war, Clinton joined the national laboratory system, overseen by the Atomic Energy Commission, in order to conduct research involving nuclear energy. In recent years, ORNL has diversified its research into many areas.

⁴⁴ Apatite is a crystallized phosphate of lime produced and used by biological micro-environmental systems. An inclusion is any discrete body or particle that is recognizably different or distinct from the substance in which it is embedded.

⁴⁵ Beta radiation is a form of radioactive decay where a high-energy electron or positron is emitted. Beta radiation may be shielded with an aluminum plate.

⁴⁶ A radiation exposure badge is used for detecting external radiation exposure. It usually consists of a piece of photographic film housed in a plastic container with different shielding materials that allow various types of radioactivity to selectively pass through and create an image on the film. The film is developed and the pattern on and degree of exposure give an idea of what type and how much radiation one has been exposed to.

this case instead of a mayonnaise jar of sand, why we'd take a big gunny sack full, about two hundred pounds of it, send it up to the Great American Color Company in Los Angeles . . . ##

Harkewicz: ## We were talking about fluorescent sand that you were sending to . . .

Inman: I'm talking about fluorescent sand and we sent it to the Great American Color Company. They would dye it, send it back to us, and then we could inject it in small amounts, along the shore, and see how much moved. Then we would resample it, which is a tedious procedure but statistically you could get a verification of just how much sand was moving in what direction. And that's the way the sediment transport in shallow water has been conducted, in fact how much goes down canyons and everything else.

Harkewicz: With this fluorescent sand?

Inman: Fluorescent sand. But, it's a very tedious thing and I know that all the graduate students—in those days our graduate students helped each other a lot more. And in fact, that was the advantage of the early Scripps. Since it was a smaller organization the graduate students knew each other better. We had some technicians, but almost all the graduate students filled some role that's now filled by a technician. And if you did something that required scuba, why then they took the scuba class and learned how to do it. So in this case, if you're going to count fluorescent grains it's a very tedious thing. You have to get an aliquot split of the material and spread it out so you know exactly how much you've got. If you have so many counts then you know how many total grains there were. It's a tedious problem because you're in this dark room with a fluorescent light and these things do light up and they're nice. But, it gets to be old hat in a hurry. Although I had students who got their thesis working on this problem. There were many other students around here who would pitch in and help. I guess it was the least fun thing about being a graduate student.

Harkewicz: Are you still doing this kind of thing?

Inman: We aren't, no, but somebody probably is somewhere.

Harkewicz: I see. You'd think they'd be able to develop some sort of . . .

Inman: Well, we did develop the radioactive one.

Harkewicz: I was curious though, I was surprised that when you described the concern that the AEC⁴⁷ had about your exposure. Because I know that a lot of times they've been criticized for overexposing the public or not informing them about their exposure. I guess I just wondered, do you think they were more careful because

⁴⁷ Atomic Energy Commission.

you were scientists or because you were using material that they had made radioactive?

Inman: I think it's because we were using material that they were irradiating and they didn't want any unknown trail anywhere.

Harkewicz: Uh huh.

Inman: To that extent I understand the problem but it certainly negated its usefulness for us because none of us were willing to be irradiated [by the chest x-ray exam] that often. Part of it, you see, was the beginning of bureaucracy. You could say, "Well, it really wasn't necessary to irradiate that often." It's just they said, "If you're going to come in and get your badge why you have to have this exam, and part of the exam is this." And bureaucracy was climbing in and we probably could have overcome it, but we decided to go a different direction.

Harkewicz: Okay. That makes sense. I guess you didn't need anymore bureaucratic nightmares. Let's see, you talked about the 1940s at Scripps and I know that the sixties have been described as the "golden age of oceanography," and I was wondering what you thought of that. Do you agree with that statement?

Inman: Well, the sixties was when we got the data from Roger Revelle's great expeditions, and they were his even though he and Sverdrup planned many of them before Sverdrup left, but they were the great expeditions. I wasn't on them, per se, because I'm a coastal oceanographer and you don't need to go spend eight months at sea just to do a coastline. In fact, all my career I've flown to where I wanted to go, taken or rented small craft, and done things like that, and then looked at them in detail. And almost always with over-flights of planes and so forth.

Harkewicz: So, you haven't been on expeditions, or scientific cruises?

Inman: No. And as I said, we had MATS,⁴⁸ so MATS would make it so easy to get to wherever we wanted to go, and we did go, a lot.

Harkewicz: So, do you think that it was because of the expeditions that people say it was a "golden age"?

Inman: Yes, because of the expeditions. We didn't know much about the seafloor, other than what you can do with bathygrams. And we knew, I mean much of the seafloor had not been charted and all of these expeditions were multipurpose. In fact, one of our graduate students here, who was early on, Ted Saur,⁴⁹ was

⁴⁸ Military Air Transport Service.

⁴⁹ Jesse Francis Theodore Saur, Jr. (1921 – 1985), student of Harald Sverdrup from 1946 – 1948, later an oceanographer at the US Naval Electronics Laboratory (USNEL) in Point Loma.

working with the BTs.⁵⁰ We didn't even know the temperature structure of the ocean at that time in any kind of detail that was necessary to work on a large scale. So all of this data of Shepard, who was doing the ocean floors, and other people just taking BTs around the world, starting to put it together, and particularly in terms of the understanding of the movement of the big earth plates, which were totally unknown at that time all of that sort of began to come into its own about 1960 or so, and I happened to be sitting here and that's why I wrote this paper on the tectonic classification of coasts because it suddenly snapped clearly why the coasts are like they are, and you can't really do something like this until you finally know what was going on. And so when you recognize that you have certain sections where the coasts are colliding, and mountain ranges forming, now the cause of the Ring of Fire around the Pacific becomes quite obvious, and why you have tsunamis and all the rest of it. And you look at places like the east coast of the Americas, where they have quite different coastlines, it suddenly all falls into place. "It's obvious why you have these different things." From my perspective, and from many, the great things that plate tectonics did for us just suddenly snapped into place, but it wasn't possible without the things that Roger Revelle and all of these people were describing.

Harkewicz: I see.

Inman: And to some extent, it was done by people on the east coast. But as I said earlier, Bob Dietz and others did some good papers here on this coast but it developed in a very short time over a couple of years—from the beginning concepts of plate tectonics to the full understanding of it—it was just rapid change. That's why it was sort of the grand time.

Harkewicz: What about social movements, like the Women's Movement and the Civil Rights Movement, do you think they've had any effect on oceanography or your work, in general?

Inman: I've already mentioned some of them. We broke the ethnic barrier here. That had something to do with it. But not civil rights in terms of the Negro problem. Unfortunately, there are not a large number of Blacks in oceanography, and that just comes directly from the fact that it was originally this rich man's toy, and I mean that it was a rich *man's*, not a rich woman's, toy. I could add, as a for-instance, that I have always marveled at the lack of progress that we made after World War II in that field. The reason I mention that is that it was World War II where we had Negroes in the armed services, and particularly in the Army. They were intermixed with other people, and this was an accepted thing. We had women in the WACs, the WAVES,⁵¹ and all the rest, and the women who weren't doing that were working at men's jobs—my mother was running a forklift section down on North Island and my sister was in the Army Nurse Corps. But the point

⁵⁰ Bathythermographs, or BTs, are recordings of water temperature as a function of depth. The technicians who analyzed the recordings, mostly women, were also referred to as BTs.

⁵¹ Women's Army Corps and Women Appointed for Voluntary Emergency Service.

is that during World War II—even take the Japanese regiments, that were the most medaled regiment overseas, I've forgotten the number, but they were some of the best—even though we put their parents in these crazy camps . . .

Harkewicz: The internment camps?

Inman: Yes. Which was—I should add right there is that most of us did not know about that. We were off doing something else. I didn't know that families of ethnic Japanese that I had know in high school had been taken to these camps. It just wasn't something that you heard about. It wasn't in the papers and we were off doing something else. We didn't know about it. But we did know that all of these people were integrated in the war effort, including women. “Rosie the Riveter” was no joke.

Harkewicz: So, you're talking about Japanese-American soldiers?

Inman: I'm talking about Japanese-American soldiers. I'm talking about Negro-American soldiers. I'm talking about women, who were both in the military and taking over all the men's fields at home. Everybody was involved in this war. There were very few people who weren't.

Harkewicz: And then after the war, it all fell apart?

Inman: And then after the war I was amazed—signs going up with things like, “Colored people can't go here.” You get to the Mason-Dixon Line and they all have to get out and get in the back of the bus. What happened?

Harkewicz: It doesn't make a lot of sense, does it?

Inman: No, but it happened. It went right back to where it was. I've always thought that “Gees, if the war had lasted long enough maybe we could have made a bigger dent.” But it went right back to the way it was [before the War]. It wasn't until much later that things began to happen. But it's always been amazing to me that we could have had all of this fellowship in the services during World War II and as soon as you all come home and get to doing your other thing, it totally falls apart. I really lost faith in my fellow man right there.

Harkewicz: I understand.

Inman: It was a difficult thing.

Harkewicz: I want to ask you about the work that you had done in the seventies and the eighties with the Middle East Cooperative Study?

Inman: Oh yeah, that's on my list.

Harkewicz: My understanding was that it was an attempt to bring together Israel and Egypt through similar scientific goals or problems, is that right?

Inman: Yes.

Harkewicz: Can you describe this briefly?

Inman: Well, not briefly. It's quite a long, somewhat detailed story but I'll be as brief as I can. And again, I've written up a section on that, so it will be available in the archives. But generally speaking, I had had no association with the Middle East problem directly until 1968. It was following the Seven Days War. In fact, let me digress to say that one of the things that secret classification did—when I got in the service I was sent off to Harvard and MIT to be a radar officer, so I was into classified material right away, and I can say then that I've had a secret classification for sixty-two years, probably some record in itself, right there. Nothing really came of this except that you had to renew it and so forth. But mostly, we don't do classified stuff at Scripps. If it's classified, it's done down at MPL,⁵² and I've worked back and forth there—I don't keep classified things up here anyway, but I still have to have the clearance. What was your question?

Harkewicz: Well, let me ask, since you mentioned the whole classification thing, are you still doing classified work today?

Inman: Yes.

Harkewicz: You are?

Inman: Well, not today. I still have this classification.

Harkewicz: In recent days?

Inman: One of our bureaucratic situations I know of was when they finally said, “Okay, we want you to detail all your foreign people, and trips, and investigations because we want to know what you did if you're going to have this kind of classification.” This came in '90, and I'd been traveling in foreign countries all my life, and I thought “Oh my god.” I didn't know where I'd been and, at first, I'd objected but it's like any bureaucracy. If you're going to keep your classification you have to do this. And so I had to go back to all my old passports and entry/exit stamps, and decide when I was where. [*Laugh*]

Harkewicz: Gees.

Inman: And so they made me reconstruct this. And now, in retrospect, I'm so glad because I now have reconstructed all my travels, at least foreign travels, so I can go back and find all the dates. Why? Because I had a classification. Because no

⁵² Marine Physical Laboratory.

way would I go back through all my passports again. It was a humongous job. But anyway, to get back to that, I'd done a lot of traveling and, in fact, my father had been in the Marine Corps and I'd grown up in China and the Philippines, born on Guam, things like that. So I was quite well traveled, but none of it had been in the Middle East. Well, one of my graduate students here at Scripps worked with us and knew the coastal things I was doing, and he was an Israeli and then he went back to Israel, and during the Six Days War they had taken all of the Sinai, and in taking the Sinai they had taken this big natural lagoon called Bardawil. The lagoon was a natural fishery. As you know there's not much tidal range in the Mediterranean, but when you break through this long barrier and the water goes rushing into the dry lagoon, it flows for three to six months, just flowing in. And it raises a very important littoral fishery that then blooms, and it turns out that that's been going on since the time of the pharaohs. It's a very old thing, and I've always been interested in historical things of that kind. And certainly Egypt and Israel are places to find these old things—so I was fascinated just to go there and become involved, in just seeing that part of the world because it's the historic center of everything. And I hadn't, at that time, done much in Egypt but I did have the situation where—so I was asked over there by the Israelis, the government, and a guy named Yohay Ben-Nun,⁵³ whom I loved like a brother, now dead, but he was one of the seven heroes of Israel, and he also was head of the oceanographic institute. We clicked when I met him, and he actually had his degree from MIT [*laugh*], so, we could speak English instead of Hebrew. Anyway, he met me, and the thing that the Israelis were wanting me to do and look at for them was to consider this big littoral fishery in Bardawil that they had now taken in the Six Days War. Their plan was to improve the fisheries for the resident Arab fishermen.

They set up an Israeli, the Nahal-Yam, which is located at the land end of Bardawil. And they'd been taking pictures of this lagoon. Not pictures of the fishery, because it wasn't theirs, but they had a lot of pictures that they'd been taking since the advent of Israel in '48 right on through this period. So, they had a wonderful photo record. And so I'm able to see just how all these lagoons were changing. And the first thing Yohay did, he was also a pilot and had a little Cessna that he flew me around the entire perimeter of Israel, several days trip, and it was just fascinating because here's history unfolding before me and I'd read about all these things but I'd never been there and seen them, the Dead Sea and all.

Some interesting things occurred. For example, the first night out we stopped at Nahal Yam which was Israeli's newly constructed fishing camp. And although the war was over, the Egyptians still sent planes to bomb the Israelis, but here's the interesting thing. So Yohay said, "We have a bomb shelter here. You know all about bomb shelters from World War II, and we also have radar warning, and if the Egyptians decide they want to send over planes, we'll get in our shelters.

⁵³ Yohay Ben-Nun (1924 – 1994), admiral; founder of the Israeli Naval Commandos and the Israel Oceanographic and Limnological Research Institute.

But they know that we have return fire so they probably won't really bomb us. They'll just come close.” And so that's what really happened. So, on comes the air raid siren. We go down into the shelters. Then pretty soon Yohay says, “Well, it's about time for them to drop their bombs. They always drop about a kilometer short, and that's because they don't want to get shot down. We don't want to shoot them down. They're ordered to do this.” And so it's sort of a ritual that they're keeping up for their Arab neighbors. [*Laugh*] And so sure enough we opened up a couple of batteries to let them know, “Yeah. We're here and awake.” And so they dropped their bombs, and turned around. And, of course, you'd feel it. Boom. Boom. You know, that shaking, and a little dust falls in the air raid shelter, and then they'd turn around and go back. This happened to me a number of times when I was in Israel out on the outskirts in the Sinai. But they never came over and really bombed the place. It was always a token situation. So I made a study of this and the idea from the Israeli standpoint is they thought that they could win over some of the Arabs to their concept of freedom and help them, and if they would help them well enough in their fisheries, and then they wouldn't have the problems that you're well aware of they face now about Palestinians and all the rest. But, we were trying to circumvent that. And of course, that was a total failure and eventually they gave all the Sinai back to the Egyptians. But, at that time it was in Israeli control and so I started studying there. In the meantime I was also then asked to attend some conferences in Alexandria to take a look at what the Egyptians were doing. And, of course, one of the things that we had to do in those days is you'd put a blank thing in your passport and the Israelis would stamp it so you keep track of where you were, but then you could take it out so when you went to Egypt you didn't have this. Because politically they didn't want you to come, if you'd been to Israel.

Harkewicz: They didn't want you to go to Egypt if you'd been to Israel?

Inman: Right. And that was part of this thing. If you'd been to Israel, you're *persona non grata* unless you're a diplomat. So I'd go to Egypt, and I'd take it [my visit to Israel] out of my passport; everybody knows this is done. It's just one of these crazy things that happens. They wouldn't let you go from Egypt to Israel, or Israel to Egypt, in those days. You had to go through Cypress or somewhere like that. That's what they preferred. I happened to go to Israel right following one of my conferences in Alexandria. So I decided I would fly, I wanted to see it anyway, I would fly to Amman, Jordan. Actually, I also had a UNESCO⁵⁴ passport at that time. And so I would fly to Amman and then cross over the Allenby Bridge from Amman, Jordan into Israel. That, in itself, is a fascinating situation. Because if I go to Amman, then try to get a taxi down to the Allenby Bridge, which is a number of miles, and I'd already told the Israelis that I was going to do this and they said, “Well, good luck.” [*Laugh*] But they knew about it and they waited at their end of the Allenby Bridge. Actually, I had my sons with me. So we got down to the Allenby Bridge and then the taxi said, “Whoops. This is where we stop.” So we had to hire a little Arab boy, a local, to help us get

⁵⁴ United Nations Education, Scientific, and Cultural Organization.

out with all our baggage. He took the baggage out to the middle of the Allenby Bridge, [laugh] dropped it, and dashed back to Jordanian side. So it left us sort of standing there saying, “Hey guys, we’re here.”

Harkewicz: Really complicated?

Inman: So, after awhile the Israeli side waved and said, “Okay. Come on.” So we then continued into Israel. But this is the way things were at that time. As you can see, I had been working in both Israel and Egypt. I knew people on both sides. They knew I was doing this. I knew I was doing this, and so it was just, but politically we didn't do much about this. And every now and then I did say something in a conference in Egypt that would be—for example, they wanted to know whether I knew something about such and so. And I said, “Well it was published in the Israeli *Journal of Science*.” And there's a dead silence. But the interesting thing is, after these conferences, if they could single you out individually, clearly the Egyptian scientists wanted to know more about the science. And it was obvious to me that the scientists on both sides really could use the other groups because they're adjacent countries. So one of the things I came up with, which was really the solution to the Middle East program—I developed the concept of a littoral cell. A littoral cell is just the place that has the source, the transport path along the coast, and wherever it goes after that or whether it's blown inland and so forth. And so the Nile delta is the source. From the Nile delta it's taken along the coast, past Bardawil Lagoon—that's why I was interested in studying that, I could get some good measurements on that—up into Israel and then down into Opti Canyon. All right, so I knew this. And so I started pushing on both sides the fact that these two countries have to work scientifically together on coastal problems because they're splitting a littoral cell and you can't really solve this problem without working together. And whether you can or not is another matter. But both sides bought into this as an excuse. “Here we have to do this.” And so I was pushing that knowing what they were doing. And of course, we weren't getting anywhere because the world politics were as they were.

But it happened that I was teaching a UNESCO course in Erdemli, Turkey. I was going to come back home after Turkey when I started getting all these telegrams. I was getting telegrams from the U.S. and telegrams from our embassy in Israel saying, “Please change your travel orders to stop by Tel Aviv on your way back.” So I go, “What's up now?” And it turns out that Sadat⁵⁵ had just gone to Israel and said “Okay, we're going to get some peace going here.” And so, suddenly, the State Department was looking for people who had associations with both Israel and Egypt, and I just happened to fall in. They wanted me back in Tel Aviv so we could begin to plan this interaction, and I'd already worked on some aspects of it. I did go on to Cairo and started working with them there. And in the total of all this I was probably going back and forth between Israel and the United States and Egypt like a ping pong ball, this shuttle diplomacy. And I don't know

⁵⁵ Muhammad Anwar al-Sadat (1918 – 1981), Egyptian soldier and politician, served as third president of Egypt from 1970 until his assassination on October 6, 1981.

how many times I was in Egypt and in Israel trying to put all this together. And what they were trying to do, now that they had peace, was to put a scientific working framework, it was called the Middle East Cooperative Study, which was a science study between Egypt and Israel. The problem was to get these guys together. The Egyptians clearly couldn't go to Israel. And they clearly couldn't accept the Israelis in Egypt. So they were at a stalemate. So what I suggested we do is to come to the U.S. and they could come separately and then meet here. And the reason this is not well known is it was such a high security problem. Where did we have this meeting? Up in T-29.⁵⁶ We brought in all these Egyptians and Israelis and they met in total secrecy. I had to start interacting with the police department here, and with the FBI. And actually the meetings went gloriously. The Egyptians and the Israelis got along together well, and in fact to this day these interactions are still the main guiding thing between them.

Harkewicz: This scientific meeting?

Inman: The scientific approach, doing this. My small contribution was in coming up with an idea that could be acceptable to both sides and then having the conference here. And to show you the real sensitivity of this, and it was a violation on the part of one of our people, not Scripps, but one of these crazy politicians, I'll just use the term, who came here and saw all these Israelis and Egyptians working together, and we'd had very high security, and what did he do but get up in the meeting and take a picture.

Harkewicz: Oh no.

Inman: And then this Egyptian lady, and she was a scientist as well, she and her husband, Sharaf El Din⁵⁷ went berserk. She said, "You are condemning us to death. And if they know that we talked to Israelis . . ." And so she demanded the film and I took it away from the guy and I gave it to her. I said, "Here." She opened the camera, exposed it, and threw it back. But, it was such a tight instantaneous situation that they knew that the opposition forces in Egypt, were seeking them out to find out who was doing this, and killing them. It was a matter of life and death. And for some stupid American to get up and take a picture of them was crazy. Now, the other interesting thing is that the conference was sponsored in part by Scripps and in part by the University of San Diego Foundation through San Diego State University. All of this was carried on in a secrecy situation until we had this meeting here. Once we had the meeting here then we had to go through this problem. "Okay, how do we work together?" They still couldn't freely go from one place to the other place. They couldn't go back and forth so they almost always had to come over to this country and meet. But we did start these Israeli-

⁵⁶ T-29, also known as the "Martin Johnson House," was one of the cottages that had been used as residences for early Scripps faculty and their families. The house is currently available for rent for a variety of occasions.

⁵⁷ Sayid Hassan Sharaf El Din (1937 -), professor of physical oceanography, Alexandria University, Alexandria, Egypt.

Egyptian meetings, and afterwards when they got the funding, once the USAID⁵⁸ was funding both sides to do this, then it became a little easier. This happened in 1980, by the way, this meeting here—but even as late as 1992, when I was still working with some aspects of this program, we were not getting published collaborations with the two countries listed together. And so I wrote a paper that listed collaborating authors from Egypt and Israel. And to my knowledge that's the first one that ever came out in this way, and that came out in 1992.

Harkewicz: Was that published in this country, then?

Inman: It was published as a coastal, *International Coastal Engineering Conference*, which was started in this country but meets all around the world. To this day there's feelings on either side, but it's these scientists that we finally got together that are still the ones who have broken this chain. They're now publishing together. They're now doing these other things, and it got a little bit hairy again when we made one of our breakthroughs with the Palestinian groups. USAID wanted us to put an Egyptian, an Israeli, and a Palestinian on all these committees and that got to be a bit hairy. Interestingly enough not so much from that side but from our side. We had Palestinian students, graduate students, up at UCSD who were having a fit that we would have, that we were asking Palestinians to do research with Israelis. I met with several of them and I must say that sort of politics isn't my thing. I mean, these people get rabid, really. You listen to them and you think, "We're all people and as far as you're concerned the Israelis aren't people. Then what are they? And if we're trying to get any peace going, how can you do it this way?" I mean, it's so black and white in some of these people's minds, particularly the graduate students, much more so with Palestinians, not the same way with the Israelis.

Harkewicz: So, do you think that science can be a way to overcome political differences?

Inman: I think science has, in certain instances, and I've given you some where it really has worked. The basic problem is that it's a small chunk of all this problem. And it has served the purpose of bringing these groups together and it does get back to the more general political aspects somewhat. But, some people on either side are a totally different problem and I don't think they even care whether there's a joint science or not. See, that's the thing you have to recognize, "Who is interested in doing this?" The scientists on both sides, not necessarily the people.

Harkewicz: So people that are not scientists don't see the benefit, then?

Inman: I'll put it another way. They are mostly involved with politics and not with whether there's any important science or not.

Harkewicz: Well, what about the whole idea with the fisheries though, in order to promote this economic benefit as a way to bring peace to the area?

⁵⁸ United States Agency for International Development.

Inman: Well, the studies that I helped the Egyptians and the Israelis do helped with the Egyptian fisheries. How big a breakthrough it is has to be considered from the viewpoint of the individual scientist. The individual scientist, through their support groups and government agencies, get a little of this feeling of success from the top down. But you don't have any of this feeling from the people, which is from the bottom up. I don't know how to bridge that. All I can say is that what little contact they have now is still basically scientific rather than otherwise and that the two groups did have and do have a great scientific breakthrough that's useful, meaningful, and it's produced science, and from the State Department's standpoint has gotten people, scientists, talking together. But it's still a very touchy situation. Now, we have all of these bombings, terrorists, and so forth, which we didn't have when we first started this. These suicide bombers are a totally different situation and it's vastly difficult to overcome and I don't have any input to that. It's much beyond my comprehensions.

Harkewicz: Well, I've interviewed some other people who have talked about the Cold War and Russian scientists, or, rather, Soviet scientists and how, regardless of political situation . . .

Inman: Ah, I can tell you lots about the Russians.

Harkewicz: Okay. But, I wonder, are scientists able to communicate and exchange scientific information regardless of the political situation?

Inman: Absolutely.

Harkewicz: Okay.

Inman: And we had wonderful interactions with the Russians. I have some wonderful stories that weren't even on my list. For example, during the early years of the Cold War, we had this crazy problem—and there were enough of them because it involved Russian ships and so forth—the scientists were, in fact, much more willing to get together. And it's always the politicians that kill these things. So, we had a situation here where the Russians declared certain ports out of bounds and we, in turn, declared other ports out of bounds. So which one do we declare? San Diego is a harbor that the Russians can't enter. They have to enter Long Beach. So what has to happen? If we're going to have visitors at Scripps, Russians, they have to come into Long Beach. We have to fly them down to San Diego where they have an aerial view of everything, of the harbor and all the rest of it. They'll know much more militarily. That's the worse thing that we could do. But we fly them down, land them at Lindbergh Field, drive them out to Scripps, put them up here and then interact with them. And I must say that the interactions were highly good and both sides played this game of trying to keep away from their political monitors. In the early days, every Russian group, or part of a group, had a Russian politico who went around and made sure they didn't say

anything they shouldn't. And so everything was very stilted. This is where liquor helps. [*Laugh*] So you start getting people having a drink or two together and chatting and then we start playing the game of how you get somebody off in a corner, and the noise level goes up to where the politicians can't follow it anyway. And, I must say, that most speak English while not many of us speak Russian—a few do, but I don't, so the conversations are mostly in English. So, I was talking to one of the Russians and I said, "Well, every time you get up and start to say something, this politician gets up and says whatever it was he said. And he said, "Oh, that's enough about that."

But none of the things that they were having cut in had anything to do with science, but only with politics. And one of these Russians, for example, was talking about the wonderful thing they were doing because he and his wife were involved with constructing this building, and it was going to be a building associated with the scientific institution they were associated with. It was very interesting to us. But the politics were such that these politicians didn't want these scientists saying that their wives were working on building something. This was not politically acceptable and therefore that was "Enough about that topic. You don't want to know that your wife's involved with the construction of a building. We just want them to think that your wife is just a social whatever." We played this game really quite efficiently. We had wonderful times because we'd take them back on a bus to wherever they were docked in Long Beach and then they'd invite us aboard ship. And they have the most wonderful vodkas, [*laugh*] nothing at all like the stuff we buy here. It was just truly good. Also we couldn't publish anything that would show a bathygram between here and Hawaii. But why? Because our Navy didn't want the Russians to know, to have this bathymetry. The bathymetry is classified. Okay. These same Russians have traveled the same route in their ships, taking the same bathymetry, but "No, we've classified it. It's classified."

Harkewicz: So they had the information but you couldn't publish it?

Inman: So when they learned we were having this problem, the Russian scientists agreed to send us the bathymetry and then we could say, "We had to get it from the Russians, but here it is."

Harkewicz: But you still couldn't publish it, right?

Inman: Oh, you could publish theirs. We just couldn't publish ours. [*Laugh*]

Harkewicz: Oh, gees.

Inman: And when that happened that's when it broke down and finally our Navy rescinded this. "Yeah, okay. You can publish bathymetry."

Harkewicz: That's crazy.

Inman: It's just one of the politics on both sides that almost prevent people, scientists and all, from working together.

Harkewicz: Well, that would have to affect your science then, right, in the long run?

Inman: Of course. But, I'm just saying that this is the politics. Scientists get along in science quite well. ##

INTERVIEW WITH DOUGLAS INMAN: 16 MAY 2006

Harkewicz: ## It is May 16, 2006. I'm in Dr. Douglas Inman's office at the Center for Coastal Studies. This is Laura Harkewicz, and we're continuing our conversation from last week. Good afternoon Dr. Inman.

Inman: Good afternoon.

Harkewicz: Okay. You said you wanted to talk about the Sverdrup-Revelle tradition?

Inman: The Sverdrup-Revelle tradition of a strong sense of service to the public that it should come from public institutions supported by the public. This was certainly Sverdrup's concept and although he and Revelle were very different people they both shared this strongly. Sverdrup actually started it shortly after World War II—to take the material learned during the war, on wave forecasting, and make a study of ocean wave hindcasting for beaches that would now apply to the public beaches and how they would erode. And, that's known as, *SIO Wave Report 68*,⁵⁹ which is in the library and it gives a wonderful background of how this all started. So many members of my class were employed on this, who had worked on some of the forecasting missions and now were employed doing that.

Harkewicz: You're talking about during World War II they were involved in this?

Inman: They were actually working on the secret parts of this during the war for forecasting for landings, and now here, at Scripps, they are working on the same project to make it available for civilian use. And it's the beginning of this sort of application. Revelle felt strongly this way and he continued this and administratively started something called the Institute of Marine Resources, which first he headed. But then turned it over to Admiral Charles Wheelock,⁶⁰ who was a retired admiral but had worked very closely with some of the applications of war research to civilian needs. And the next big thing that came out of that was the oceanographic investigations of the sewer outfalls at White's Point and Hyperion. And there again they employed all of us who were working here as graduate students to make a study for the City of Los Angeles. And it's still one of the very important studies, the beginning of all of the studies of what happens when you dump sewage through an outfall out and how much treatment is needed in order to avoid some of the damaging, ecologically damaging, effects.

Harkewicz: That was paid for by the City of Los Angeles, then?

⁵⁹ Scripps Institution of Oceanography, *A Statistical Study of Wave Conditions at Five Open Sea Localities Along the California Coast*. SIO Wave Report No. 68. SIO Reference Series 47 (9): 1947. Available at SIO Library under the call number SIO 1 SC817.

⁶⁰ Admiral Charles DeLorma Wheelock (1897 – 1980), rear admiral (retired), associate director of Scripps (1953), acting director of the Institute of Marine Resources (IMR) from 1954 – 1958, professor of oceanography and director of IMR from 1958 – 1961.

- Inman:** In this case, they were paid for by the City of Los Angeles to the extent we needed to go beyond our usual research budget needs. The general rule of thumb was if you could answer a civilian problem, and do it within your office and time, but if you had to spend detailed time elsewhere to do it for them you still did it at a reasonable rate but they would have to compensate the university, in this case the Institution of Marine Resources, for that time.
- Harkewicz:** So you're saying—it was sort of like this was almost an adjunct part of research that you were already doing that you could apply it to the public sector?
- Inman:** That's correct. This led to the first of the great oceanographic investigations, and it followed through in its studies of Mission Bay and development of Mission Bay, which I was involved with; the determination of the last natural shoreline of the California coast which turned out to be a legal dispute between the states and the nation as to just where the boundaries of the state's land and the nation's land occurred and what's the meaning of "high tide line" and all of this sort of thing.
- Harkewicz:** And this was in the mid-fifties or so?
- Inman:** These activities were beginning in the late forties, well in the early fifties and going right on through to the sixties.
- Harkewicz:** But now let me clarify, though. If you were using some of the wave information that you had learned during the war, did you have problems with any kind of classified materials or anything like that that you were using?
- Inman:** Wave research was all declassified within the year following World War II.
- Harkewicz:** I see.
- Inman:** So, and I repeat, we did no classified work here at Scripps after the War, or at least none that I'm aware of.
- Harkewicz:** Right. Okay. That was done by the Navy?
- Inman:** It was done by the Marine Physics Lab down at Point Loma.
- Harkewicz:** Right.
- Inman:** And they are still, to this day, doing that. Other things that we did was to look at the Bodega Head power plant for the University of California, Berkeley, and what should happen there. We also studied the California coast and the use of the ocean, which was a very big study, and this was one of the first detailed studies of what should happen or could happen with the California coastal areas. It concerns itself with fisheries, beach erosion, all of these problems and how the state should

utilize them and where and what they should do about protecting them and all of that is in this study, *California and the Use of the World Oceans*. I think it was put out first in about 1965 as a final publication of the Institute of Marine Resources, but it started much earlier than that. I was personally involved in the siting of the San Diego outfall, which is now off Point Loma rather than Imperial Beach as they were going to put it. I was also involved in the campaign to avoid building the airport off of Point Loma, which some people in San Diego wanted.

Harkewicz: Many historians have written about tensions between the idea of doing applied research versus basic research and I've even talked to some scientists already who seem to be against that kind of applied research.

Inman: Well, the ivory tower says you never do anything except basic thought and you don't ever involve a useful purpose. And in fact, Roger Revelle's creed of ONR support following World War II was, "If it uses Navy relevance as a reason, turn it down."

Harkewicz: Right. You had told me that.

Inman: And I repeat it. And, if it isn't good science, don't do it. But all these things, like the sewer outfalls, were good science, and we did it. And it was basic. Now, you can quibble about who pays how, and so forth, in the Institute of Marine Resources, and I don't know as much about that because that wasn't something that concerned me overly at the time.

Harkewicz: But then, if you had to write a proposal for something that involved this kind of stuff how would you address that, or wouldn't you?

Inman: I think the things that we were writing proposals for were submitted to whatever agency would be in charge of studying that, and that they were indeed, in many instances, totally unrelated to the local needs and local civilians' needs. I'm citing these as certainly the *Study for the State of California* or the *California Use of the World Oceans* as a very basic first guide of university activity, done through the Institute of Marine Resources, which was then a separate but a sister part of the Scripps Institution of Oceanography, and was there to study and more directly answer the needs of people. In other words, this is a planning report, but what goes into this is basic science. And it's coupled directly with the concept that if you're going to do any detailed planning, you're going to have to have some detailed basic science to put into it, and if you don't your plans aren't going to be worth much. And that's the essence of what I'm trying to say.

And to continue with another example, I was involved with a committee, citizens committee, for the City of San Diego to put out a little brochure called the *Ocean Edge of San Diego*⁶¹ in 1969, telling them more about how our basic science of rip current circulation and everything now had a practical use. And that led, by

⁶¹ San Diego Planning Dept., *The Ocean Edge of San Diego* (San Diego: Planning Dept., 1969).

the way, to a close interaction between Scripps and lifeguards to begin to inform them of what was, of the circulation and how they should rescue people in rip currents and these things. We were instigators of all of this kind of situation which is now just standard operating procedure. We don't have to do it anymore. It's now knowledge transferred. So the university has gone ahead and continued to transfer useful things to the public, for either planning, safety, ecology, where you should have parks, and the next one I was going to talk about was establishing the California Coastal Commission,⁶² which was started here. It was started by a public need, but we here at Scripps, particularly Jeff Frautschy,⁶³ who was then an assistant director, and I would work on “What should this group do and what would be reasonable from a scientific standpoint that would be useful and helpful to the state?” And in fact, Jeff and I ended up writing many of the portions of the Act. We went up to the legislature and helped explain it. We helped explain why these were important points to the state legislature, when asked, and did this sort of thing and Jeff Frautschy then served as one of the first commissioners on the state Coastal Commission.

Harkewicz: I want to push you on that a little bit, because you started to say something, then you kind of backed off. And I wondered about the role you see of scientists in public policy?

Inman: This is where we started. Roger Revelle, following the Sverdrup tradition, saw the role of scientists as necessary to establish useful public policy when it was needed. And that's why I was trying to separate what we did in the Coastal Commission. We did not go out and campaign to get this passed. We did not start and have group meetings that we need to do something to do this. But when it became apparent that there was such a need we entered and provided the necessary statements that would make good science and follow-through.

Harkewicz: So . . .

Inman: That's a very different thing.

Harkewicz: Okay, you're talking about being expert advisors, as opposed to . . .

Inman: Expert advisors where science applies.

⁶² The California Coastal Commission was created by voter initiative through Proposition 20 in 1972 and made permanent by the Legislature through adoption of the California Coast Act of 1976. The Commission's mission is “to protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean.” The Commission is an independent, quasi-judicial agency, which carries out the California coastal management program through partnerships with coastal cities and counties. Local coastal governments are required to prepare individual programs that contribute to implementation of the Coastal Act policies regulating land and water use in coastal areas. For more information see the Commission's website at: <http://www.coastal.ca.gov> .

⁶³ Jeffery Dean Frautschy (1919 – 1993), marine geologist at Scripps, assistant director 1958 -1980, and deputy director 1980-1982.

Harkewicz: Do you think there's ever a time when a scientist should go farther and be an actual advocate?

Inman: I think that's an individual problem. It isn't a basic university problem, I don't think. Some people don't want to have anything to do with this, and others do. Same way with the present problems of climate change and what have you. Some people feel very vociferous about it and push, others don't. That's an individual problem. I would say it needs a minimum of university policy because that's an individual problem and how you want to handle your thing. But when there is a need, and this is the Sverdrup-Revelle concept, when there is a need for basic science to be applied to help answer a question—then you should do it, and you have an obligation to do it. And that's very much like the committees that I've seen here on the Climate Group that go back and say, “You tell me what you want to do and we'll tell you what its effect will be.” That's the science part of it. We're not pushing that you do it or you don't do it.

Harkewicz: I see.

Inman: And that's the way it's always been, as far as I know.

Harkewicz: Do you think that most people that work here at Scripps feel the same way as you do about this kind of effort?

Inman: I'm sure they don't. I mean, if there's anything you can be sure of it is that scientists never will agree totally on anything. And in fact, that's another Revelle statement, “Fan the flames of controversy. It's good. Have a controversy, talk about it, and work on it.” So you come together, and you don't have to agree.

Harkewicz: Do you see these feelings along any kind of generational lines? I mean, do you feel like people that were more in the Sverdrup-Revelle tradition are more likely to feel the way you do than people that may have come later or from somewhere else?

Inman: Well, I think that it's just like everything else. People are different and some people are going to be pushing whether they're scientists or nonscientists to do what they think is right for public or private or whatever kinds of involvement. And, I think this follows right through in our science. We're supposed to do good peer-reviewed science. And when we see an application of that good science that public policy is ignoring we really have an obligation to point it out. Because if it's poor science, it's damn well going to be poor policy.

Harkewicz: What's the role that you see as far as climate change and coastal work?

Inman: I see the same role that the Climate Group has been setting forth that I've listened to in their various lectures and in their discussions of when they've gone to these foreign meetings and so forth, and they're under a lot of fire because the U.S. is

not doing very much about climate change. And their concept is, “Tell us what you want to do and we will tell you what effect it will have. We have models. We do this. This is the science part of it.” And I feel that strongly about everything else we do. If we've been doing basic science that has an application to a problem, then we should exercise our right to state it. And you'll see articles in *Science* and other places, and in the *New York Times* and everywhere else, and you can argue about if they should or they shouldn't, or “This is too political.” This is going to be a continuing situation and it's healthy to have it.

Harkewicz: I looked at your website on coastal change⁶⁴ and it seemed to me that it was directed towards the public and I don't know if that was what you intended or not. What was your intention with the site?

Inman: Our intention was interaction with the public to help them. First, to get them interested enough to read the website. If they won't look at it, then, there's not much point in having it. But the other is to do on a level that the general lay public can understand, to present facts about the coastline and its evolution, that people should know if they're going to be involved with either policy or understanding of erosion or any of these other things. That's the whole purpose. In other words, it was an outreach purpose and, if we achieved that, then it's serving its purpose. If we didn't, then we should improve it.

Harkewicz: So, like with most of these things that we were talking about here, you see your role as being informative and giving the basic science involved? .

Inman: This is what I'm trying to push across from the Sverdrup-Revelle concept. You do basic good science and where you see a use for it—and particularly now “outreach” is the word that's put for all that. So, we outreach. Reach out, then. And that's what we should do. And we shouldn't, though, be involved in trying to pass political concepts unless we have a feeling—and this is where I think many people become more involved in the politics—is the fact that if we think it's really going to ruin the world for us and our children, that's a personal conviction and then you have to do it personally.

Harkewicz: So, how would you do that? If you're a world-famous scientist and you know all this information but you are really passionate about something, like you just said, are you not supposed to say, “I'm John Smith, world-famous scientist”? Are you supposed to back off from the fact that you're a scientist?

Inman: No. I said, if you see a need and you think that this is going to help destroy the world or destroy the climate, or the ecology that you're involved with then you have an obligation to point this out. And I think that in these generalities it's a little bit like saying you have an obligation to point out that the greenhouse effect is real, regardless of whether people say “There's no such thing,” or “There is such a thing.” Point out it's real. If someone will ask you “What should we do

⁶⁴ Available at: <http://coastalchange.ucsd.edu> .

about it?" you can point out anything that will reduce it is going to help. And if they get in an argument about how to take, about whether they should go on to taxing gasoline and do all of these various things that would help reduce it, that gets more and more into the politics. That's not us.

Harkewicz: All right. I understand. But, if I could just ask you then, you keep calling this the "Sverdrup-Revelle Tradition"?

Inman: That's where it started, to my knowledge.

Harkewicz: So, do you see scientists from other organizations or not even that our, from other places that aren't oceanographic institutions, doing things differently, with less of a public connection?

Inman: No. I don't, I think that generally speaking this tradition as I talked to you about the group that came here and then were sort of ivory towerists for a while, and were pooh-poohing helping the public. That wasn't our business. But I think now that at least the people I understand and know, and the advocates of "How do we get our science to help solve this world problem?" It's very much in the Sverdrup-Revelle tradition.

Harkewicz: I know, as you said last week, that oceanography prior to World War II was sort of a gentleman's occupation, but do you think the fact that it was used for military purposes during the war contributed to this idea that there was other uses for the science outside of the ivory tower?

Inman: I believe that the Office of Naval Research following World War II, particularly with guys like Roger Revelle in it, were definitely pointing towards doing basic, good science, and that since ONR was the only functional science supporter following World War II of any consequence that it was their job to get out and sponsor basic science. And you can say what you will about the military establishment, ONR's guiding principle was, "Do basic science." And it still is to the extent that any basic science in the ocean is bound to be of aid to the Navy, and I think that you have to compliment them on that because no matter what, throughout the years, and the fact that Congress has restricted ONR to what they call "more operational problems for the Navy," nevertheless that's still an important concept in the ONR as far as I can tell with project leaders.

Harkewicz: Well, my understanding is that after World War II, ONR dropped off on a lot of the wave-type research and went more into deep sea oceanography work.

Inman: ONR as a whole clearly did because of facing the Cold War and so forth, which was not a landings proposition but who's going to drop what nuclear warhead where? And it was quite a different standoff than the present. And I think all military were addressing that kind of thing. But ONR has always had, to some extent, an interest in coastal situations, and I know that in my case and I think

maybe I mentioned this last time, when I came here as a graduate student in '46, ONR was paying my salary as a basic graduate student that had nothing to do with ONR. And furthermore, they have supported my basic research, off and on, throughout my whole career, and that makes it for sixty years. Occasionally, and I have a secret clearance, I have indeed met with them to do classified work, which is down at Point Loma, not here. But I've had these clearances so I could talk to them, and that's something on the side. But basically, my support by ONR has always been for basic research.

Harkewicz: Is it true that they've become more involved with coastal research recently?

Inman: They have funding trends. And right now they had a trend where waves and beaches are of importance. They are concentrating their efforts. Now they're looking into that and following through with lagoons and estuaries, and so forth, and then in another few years they'll look somewhere else. So, they always have something that is their concentration to bring up the science in a given field.

Harkewicz: Okay. As long as I took you off track of your list there, I wanted to ask you something about the Center for Coastal Studies, that's part of the Integrative Oceanography Division, isn't it?

Inman: Well, it's become that.

Harkewicz: Okay.

Inman: And, in fact, if you want to talk about the Center for Coastal Studies, it was my one great effort to reintroduce interdisciplinary activity at Scripps, and it's been a pet project of mine—the fact that Scripps brings together basic science from elsewhere, and that's a good healthy thing, and these guys tend not to have a background in oceanography but they're more schooled in their own basic science. And sometimes you find your fellow workers and you never even know what each others are doing. And this is particularly a problem as we've grown. You see, it wasn't a problem back when we could all meet in one room and talk about it. Everyone knew what everyone else was doing in a general way. Now they don't. And, it's worse and worse because we have more and more people, bigger and bigger organizations and so forth. So, back in 1980 I proposed having a Center for Coastal Studies which would bring into it—and my idea was that we'd have an interdisciplinary group here where the interdiscipline was centered on the coast. That meant we want waves people, and they would come from physical oceanography and so forth. We're very interested in sediments and cliff erosion, and that's the geologists. And we're also very interested in some of the timelines and that's archaeologists, the fact that we had a civilization ten thousand years ago around here, a weighted date when things happened because they ate material and that can be dated. So that brings in another group. An example is Patricia Masters who's an archaeologist and she's been our webmaster for our outreach website, as well, during the last four or five years. So, my idea was to

bring these people together and look at the coast. And I think I more or less failed. I failed simply because, unless they've been people working directly with me, then nothing much happened. I was able to get people like Clint Winant and myself, and Bob Guza, and other people involved.⁶⁵ But the geologists would have almost nothing to do with me. In fact, I'm both a geologist and a physicist. I perhaps mentioned last time. But when I came here, since I was working with Shepard, then I was the chairman of the Geological Sciences Group, in fact the student advisor for that group. And as soon as I tried to establish the Center for Coastal Studies, they accused me of abandoning my discipline—and even after some of them retired, they said, “We'll welcome you back if you care to come.”

Harkewicz: The geologists are saying this about you?

Inman: Yeah, the geologists. But the oceanographers never did because they never thought I was an oceanographer. I mean a physical oceanographer. But I've always had a repertoire and worked well with the biological oceanographers. This building is called the Center for Coastal Studies, and as this group evolved and as time went on, then we came to the problem that the business offices needed more space and they wanted us to extend this beyond just “coastal.” They didn't want us to be only coastal out there tide pooling. So they wanted to change the name and it's changed to Integrative Oceanography, whatever that might mean.

Harkewicz: So, what is the Center for Coastal Studies now, then?

Inman: It's part of the Division of Integrative Oceanography.

Harkewicz: Let me ask you this question, and you can tell me that you had nothing to do with this or that you disagree or whatever, but when I talked with Elizabeth Venrick about forming the Integrative Oceanography Division she said that she recognized the importance of being proactive because the administration was dividing people up and merging people?⁶⁶

Inman: Absolutely. The administration, you see, under Charlie Kennel⁶⁷ particularly, had the concept that we'd go back to physicists, geologists, chemists—and if they wanted to be interdisciplinary then they could be. And so, yes, I was active some years ago when Kennel first came here, keeping it interdisciplinary, and in fact that's why we have this name. Kennel, on the other hand, wanted this big breakdown. We've had this problem all along and so it's not a new problem. It just continues. And, right now we're called the *Integrative Oceanography Division*, and that's broader in people's minds than “coastal.” But it all started with the coastal group. And it really followed through with the people who are

⁶⁵ Clinton D. Winant (1944 -), professor of oceanography at Scripps; Robert Thomas Guza (1948 -), professor, researcher, and co-director of the Integrative Oceanography Division at Scripps.

⁶⁶ Elizabeth Louise Venrick (1941 -), biological oceanographer at Scripps. For the oral history interview with Venrick see: <http://repositories.cdlib.org/sio/arch/oh/venrick/>.

⁶⁷ Charles Frederick Kennel (1939 -), Scripps director 1998 – 2006.

running CalCOFI⁶⁸ and all the rest of this group because they are really basically coastal.

Harkewicz: I see.

Inman: And, guys like McGowan⁶⁹ and I have worked together, not on projects or research, but we have always been supportive of each other in terms of what we're trying to do. So, I would say, "Yes," we've had as much integration now as we've ever had but it's never been very easy.

Harkewicz: Hmm, you know, you said "it waxes and wanes"—this interdisciplinary approach—and we talked a lot about that last week about the Sverdrup approach. Does that have something to do with whoever's in charge of Scripps at the time, from your experience?

Inman: Well, I would rather say that when you have a strong and a really admired director like Sverdrup or like Roger Revelle, or someone like that, who is out doing something, then they have a vast impact on it. Alternatively, when you have someone who's less interested—and this would extend into Nierenberg and certainly Frieman,⁷⁰ and Kennel where the interest is mostly in keeping the money flowing. And I'm not saying we don't have to have money. I'm just saying the impact of the director is less important then, and there 's less said about interdisciplinary, then we're left to our own designs, and some people will be interdisciplinary and some people won't be. And so yes, the leadership, particularly if it's a leadership in terms of making global progress in some aspect of the ocean and doing things like that, and the best example again are the wonderful expeditions that Revelle led, or that Sverdrup set up and Revelle then led, it's things like that. Leadership is important. If they're just holding things together and getting us enough money to live and we're progressing, that's important too. But then, I think interdisciplinary activity falls apart and they look at what's simplest and they can understand a physicist and a chemist, but they can't understand geophysics or geochemistry and so forth as well. So that's the way it goes.

Harkewicz: Do you think any of that has to do with the time period itself? I was talking to Jacqueline Mammerickx yesterday and she was talking about the fact that she was involved in a time frame when mapping the ocean was important and it was more like an exploration.⁷¹ You know, sort of like when you talked about the expeditions. Whereas now, a lot of that's been found out, so to speak, so that . . .

⁶⁸ See footnote #25.

⁶⁹ John Arthur McGowan (1924 -), professor of biological oceanography at Scripps.

⁷⁰ William Aaron Nierenberg (1919 – 2000), Scripps director 1965 – 1986; Edward Allan Frieman (1926 -), Scripps director 1986 – 1998.

⁷¹ Jacqueline Mammerickx (1935 -), research geologist at Scripps. For the oral history with Mammerickx see: <http://repositories.cdlib.org/sio/arch/oh/mammerickx/>.

Inman: Oh, I would say that Jacqueline is correct but, that's not all of it. Now, you see the place where we're going, we've established some of these things as separate concepts. We've now studied them. We know a lot more about coast and coastal problems. We know a lot more now about the interaction of the atmosphere with the ocean, and, clearly, our climate groups here are right at the cutting edge of a very important problem. And you can say, "Well, the coast isn't quite as big a problem in that concept, although it's still marginally important, and for coastal areas like California, Oregon, and Washington, it is still one of the most vital aspects. But still, the big ongoing things are going to be more like climate, climate change, and climate groups. But this interest in climate change didn't start just recently. This started when we brought in Jerry Namias⁷² way back in the fifties and started making the first looks at "How does ocean temperature affect the climate and can we begin to do this?" And so a lot of the climate research has been right here at Scripps, all along.

Harkewicz: As long as we're talking about the future and the present, what do you feel about the whole idea of Scripps' involvement with genomics?

Inman: Oh, I know least about that. I'm sure that if we're involved in it then it's probably something we should be doing. Generally speaking, we don't get involved and go very far with something if we shouldn't be.

Harkewicz: All right. It was just something that came up with a couple of my other interviews so I was curious what you thought. So, I sort of took you off track of what you wanted to talk about so I wanted to give you an opportunity to get back to what you wanted to talk.

Inman: Yeah. I wanted to just talk briefly about the Revelle situation. I mentioned some of that before. But I don't know whether we talked about our—Revelle and my—midnight talks?

Harkewicz: No, you didn't talk about that.

Inman: Well, it turned out, when they began to close out the housing in the housing project where we were all living, and it looked like I was going to stay here and I applied and got a cottage down here on the ocean front, and the cottage had this wonderful number, Number 1 Discovery Way.

Harkewicz: Okay. Like the Martin Johnson house?

Inman: That's 29.

Harkewicz: Okay. But is that the same kind of housing?

⁷² Jerome Namias (1910 – 1997), research meteorologist at Scripps.

Inman: Yes. And it's this beat up old little cottage, right where Surfside is now.⁷³ They actually moved it back and then tore it down, so it's not around anymore. But Surfside replaced it, for better or for worse. But at that time it was just a little cottage here, and Walter and Martha Munk lived in another little cottage just over there, and Sverdrup lived in the director's place. And it was a very charming integration of people, nationalities, and times, which was really wonderful. When Roger started here as director, the first thing I will say is that Roger was a leader, a visionary, and absolutely the poorest manager I've ever run into. [*Laugh*]

Harkewicz: I've heard that before.

Inman: And, in fact, Roger was just exactly what we needed as long as we had someone like a strong knowledgeable, really aggressive secretary to keep him on track. And he had this other thing that made him so wonderful to talk to, if you had a question or a problem and could finally get his attention, Roger would give it to you one hundred percent and that was it. You had this guy and you had this wonderful mind just dwelling on your problem. You weren't just outside doing something else. And in this case, I had an unusual opportunity because living at Number 1 Discovery Way, it turned out when I finally did get a decent research project that I could use as my thesis, because I'd passed German . . .

Harkewicz: So, this is when you're still a graduate student?

Inman: I was still getting my degree but as I say that didn't cut any water with Roger. That was all right. And Roger was just brand new in the director's office. And, Roger worked late. I don't ever recall him going home before midnight. [*Laugh*]

Harkewicz: Hmm. That's late.

Inman: That's late. And, I don't normally do that, but when I was working on my thesis and trying to get some things done there was a period of a year or so when, yes indeed, I was doing that, too. And, we had children, and so you'd get them to bed and things quiet down. You could turn on a little classical music and I more or less from eight, or nine, or ten or whenever I'd get the family down, then I could work on things. So, it turned out that there wasn't much parking around here and Roger was always late. So, he was frequently parked on the lot just to the south of us. And, when he would leave at midnight and start home to find his car, and if I had lights on why he'd frequently knock [*laugh*] and say . . .

Harkewicz: Just drop in, huh?

Inman: Stop in and say, "Do you have a drink?" [*Laugh*]

⁷³ Surfside was building T-8 located at the south end of Scripps campus. It was a house that was acquired by Scripps in 1961 and used, most recently, for student recreation and offices. Surfside was demolished on January 8, 2007 to make room for the Paine Scripps Conference Center.

Harkewicz: Ah, of course.

Inman: We World War II people were hard drinkers, very hard. But, we were not drunks, a big distinction between the people now and then. This old cowboy song about “Hold your liquor like a man,” was for real. And if you didn't discipline yourself so you were never drunk you wouldn't succeed anywhere in our world. But otherwise we were very hard drinkers and Roger probably was feeling the need because he didn't sit there in his office and drink, that was for sure. And so, he'd knock on my door and we'd chat about almost anything except people specifically. He rarely said anything about anyone personally. But concepts, ideas, and things of this kind. So I had a year of, maybe not every night but many nights of having chats of this kind with Roger that I don't think anyone else ever has had, and it was a really, really wonderful experience.

Harkewicz: Can you remember any of them that you could share with us?

Inman: Oh sure. Well, I can remember one of them. When I was working on this paper—you know he'd been over there at our place, it was about one o'clock, and he said, “Well, I'd better get home, but come by tomorrow.” And I thought, “Uh oh.” “And we'll go over your paper.”

Harkewicz: This is your thesis?

Inman: I think it was not that one. I was working on several papers at the time. In fact, I remember now, no it wasn't, because had I said, “Well, this is my thesis,” he would have stayed and worked. So, I went by the next day and told his secretary and she said, “You know, he's not likely to get to you for several hours and maybe not then, and then he's giving a talk up the coast at Point Mugu,” which is way the other side of Los Angeles. I guess it was Port Hueneme. “And he'll have to leave around noon at least.” So anyway, I finally got in to see Roger around eleven o'clock and I got his total attention, absolutely total, and he had all these good ideas and he was asking questions, making suggestions to me when his secretary came in and said, “Roger, you have to leave. You haven't had lunch yet and you have to leave to go to Port Hueneme.” He had a guy driving him. And so he said to me, “Oh, just come along.” [*Laugh*] So we brought my paper and we continued the discussion in the back seat. We got up there to where he had to go in and give his talk. Meanwhile, I could think about all the things he'd been talking to me about. He gave his talk, came back, and we continued back down here all the way, still working on this paper.⁷⁴ ##

⁷⁴ Inman later added the following [apparently in relation to the conversation he and Revelle had on their trip up to Port Hueneme]: “At one time Roger tried to get me to talk about what it was like to make an amphibious landing. This was not morbid curiosity on his part but rather that somehow he had not been subjected to the rigors of war that his uniform implied, a rather curious feeling of inferiority on his part. Roger spent most of World War II as a naval officer in Washington, D.C. where he helped make decisions about many phases of Navy/Marine activities including amphibious landings. After setting up the Marine Corps Radar School at Camp Lejeune, I subsequently participated in the amphibious landings at Peleliu and Angaur in the Palau Islands. We discussed generalities of logistics, enemy

Harkewicz: ## I guess I'm wondering, was this situation unique because you lived so close to where Revelle worked, or did he do that with a lot of people where he actually would take that much time? You said when you would have his attention that he would give, I mean if you could get it he would give his full attention. Did he do that with a lot of people?

Inman: I think that he did that with anyone that could get far enough through his schedule to get to him. And that's where a good secretary came in. The fact that I did live where I did for that period, and was burning the midnight oil, which is also the other requirement, I saw much more of Roger than I ever would have otherwise. It was just that circumstantial. He was tired. He'd been doing his desk job, which he didn't like, which was probably signing this and doing that. Administration was never a pleasant thing for him. And he was on his way home and wanting to lighten up a bit and so that was different. But on the other hand the answer is, yes, when he worked with people and he did like to work with students, he did like to work with scientists, and if you could get to him it didn't make any difference, as long as he was interested, he gave you his full attention. And I have always thought that the fact that he would drop by as frequently as he did during this period of a year or two made our association much closer. Because as things went forward and things got bigger and he became more interested in not only his expeditions that he was taking, but also on the upper campus and, by the way, where he should have been our first chancellor, then I tended to drop out, except that I still had these occasionally unique conversations with him. And I do remember one conversation. He called me up the day that he was, essentially, fired and we talked and I said, "Isn't the president supporting you?" And, as you know, the whole firing was his locking horns with Regent Pauly⁷⁵ over where UCSD should be, whether it should be down at Balboa Park or up here at Scripps. And Roger said, "It only makes sense up here." And I said, "Isn't Kerr⁷⁶ with you?" And he said, "No, I'm calling to say that I'm now resigning because I have no option. He, Kerr, is too busy to talk to me. He's in his rose garden." I remember that so clear. I also got to talk to him, I guess, two days before he died—when he was going in for his final surgery we had a long conversation. The reason I talked as much as I did about ONR was that I was asked by ONR to give this talk back in Washington. Actually, near Quantico, Virginia. And, I was supposed to be the noon speaker back there and I selected the topic, *ONR: The Early Days*. So, I went up to Roger and he, at that time, was back here working as an adjunct professor teaching more on the upper campus where he did the bulk of his teaching. So he came down here to my office and we went over these

fortification, and wave predictions. However, I was not emotionally up to the sheer mayhem of combat and we never referred to this subject again."

⁷⁵ Edwin Wendell Pauly (1903 -1981), American oilman and political appointee, Regent of University of California. For information about the tensions between Revelle and the UC administration about the founding of the University of California, San Diego see: Nancy Scott Anderson, *An Improbable Venture: A History of the University of California, San Diego* (La Jolla, CA: The UCSD Press, 1993).

⁷⁶ Clark Kerr (1911 – 2003), president of the UC system 1958 – 1967.

things and that's where I got all of these direct quotes from him, and that was just, as I recall, three to six months before he died.

Harkewicz: You were talking about the Sverdrup-Revelle tradition of obligation to the public and you talked about how Roger Revelle would interact with graduate students a lot.

Inman: Oh, yeah.

Harkewicz: Have you been able to do that, take tradition on yourself at all?

Inman: I don't quite understand you.

Harkewicz: I guess what I'm trying to say is, you talked about the disciplinary tradition of Revelle, but this was more of a personal-type tradition, where he would interact with the students if he had the time, and I wondered if you felt like you wanted to emulate him in that respect?

Inman: Oh. Well, I've always thought that a good professor should do that, and I'm sure he added to it. And, as I say, I've been fortunate in the people that I've had throughout my educational system, from my high school principal, who was outstanding, to my college professors who were outstanding, to come here and particularly have Sverdrup and Revelle. These have been the big people in my life.

Harkewicz: How important is his teaching to you?

Inman: Oh, essential. In fact, if I only could do research and no teaching I wouldn't like it at all. Now, I'm trying to wind down. [*Laugh*] At my age one should be able to.

Harkewicz: I would think so, yeah.

Inman: And do a little more writing and so forth. But what's left? A postdoc fellow that I am teaching, and a graduate student. Those are the two last people in my group, and of course Jean⁷⁷ is the secretary. And so, yeah, I'm working with students and I've always thought that that was an essential thing. And at one time—this is, of course, a silly brag, but I had something like ten or fifteen graduate students working with me. And, I knew that that was much too much, but trying to push them out in various directions just takes time. And since I was the advisor of the group at that time, why, I just ended up with too many.

Harkewicz: Were all the people involved in coastal work then or did you just happen to be their advisor?

⁷⁷ Clara J. "Jean" Keefner.

- Inman:** I just happened to be their advisor. But, and of course, coastal's been my specialty, where it applies. The world has a lot of coasts.
- Harkewicz:** Uhm-hmm. Uhm-hmm.
- Inman:** Think about it.
- Harkewicz:** Yeah. Definitely. You're right.
- Inman:** Particularly the world around the ocean.
- Harkewicz:** Some scientists that I've spoken to have said that there were some people here, at least historically, that didn't want to teach at all, or that were able to maneuver things so that all they had to do was research.
- Inman:** Well there, I mean people are different and that's good. And, there are people who really want to do research, and I can't say they're egotistical, all I can say is that to them research is the essence of what they need and want to do. And they don't interact well with students as a rule. I, on the other hand, have always thought that research was something that you wanted to do and accomplish and then pass on to some other group to work on. And so, students have always been important to me, even—as a for instance, when I got out of the Marine Corps and was waiting—I got out January/February of '46 and thought I was going to Caltech but then came here, but what did I do in that semester? I went back and started teaching a load of all the sciences at San Diego State College. I taught all that semester and I was doing it not just because I liked to teach but because I also realized how rusty I would be in the general field of science, and this would be a splendid way to catch up with it.
- Harkewicz:** Well, that's a good idea.
- Inman:** But, I wouldn't have done that if I hadn't been wanting to teach. So, what did I teach? You know, a course in mathematics. A course in, I think, chemistry. Well, I had a lot of courses in chemistry. And oh, and also a course in general science physics, and that was a fun course.
- Harkewicz:** Well, you really had a span there, didn't you?
- Inman:** Yeah.
- Harkewicz:** Well, you know you've been at Scripps for a long time and I was wondering, what do you think has been the biggest change that you've seen in Scripps over your sixty-some years here?
- Inman:** Well, I think the change has to be the thing that the whole world is seeing and we are seeing too, is that everything has gotten too damn large and that bigger is not

necessarily better. And I don't have any good ideas of how it could have been different. I just think that the place that I knew back in the early days was the best and it was best simply because you had a feeling of belonging. And we all knew each other. We fought and did all the other usual things, but generally speaking we got along. But now that it's so big and that's, I think, why I tried to get something like the Center for Coastal Studies to bring in an interdisciplinary approach because I never liked to work strictly within a single discipline. I've always thought that in this world, and this is what's proving to be true in climate research and everything else, everything is now so interactive that, I think, it's justifying that concept. One of the major good things happening with science right now is that it is becoming more interdisciplinary than it was before. It has to be.

Harkewicz: Uhm-hmm. Uhm-hmm. I wanted to clarify something that you said when you were trying to set up this interdisciplinary program at Center for Coastal Studies. Was your idea to have people from various parts of Scripps in various disciplines to come to work on problems here or was it actually to come and work in the Center for Coastal Studies?

Inman: No. I did not want anybody to change their interests. I wanted them to be part of a group. For example, the biologists I wanted to bring in, when Bill Fager was a professor here, and he was our first ecologist. He and I worked very closely together. And I thoroughly enjoyed all of that. And when Walter Munk was teaching waves and doing his wave research, which I used, he and I worked very closely together, and for limited times. So my concept was that, since much of my activity has been on coastlines and that's where I've spent most of my research, and there's needs from ecologists and everybody else in this, then the Center should be a place where they could come and we could talk and we'd have a research group here that would be, if you like, established in the old ways. We would have our meetings, weekly meetings or whatever, and we'd be talking about things together. And Scripps as a whole can no longer do that because it's too large. So my concept in having the Center for Coastal Studies was to involve biologists, chemists, and people who would be working on things that have application and interest along the coast. And certainly, that's why people like Bill Fager and then his student Paul Dayton,⁷⁸ who's here now, have been very essential in my work. Not that I've worked with them but that I talk to them more than I would someone else simply because the kelp forests are an important part of the coast and something we have in common.

Harkewicz: Uhm-hmm. But, I guess what I'm trying to clear up is, if you say, say Walter Munk came down and worked on a problem with you on the coast, would he go back up to IGPP⁷⁹ or something like that then?

Inman: I wasn't thinking that. At one time, when I was director of the Center, we had a group who were all at least partly funded under ONR to work on coastal

⁷⁸ Paul Kuykendall Dayton (1941 -), professor of oceanography at Scripps.

⁷⁹ Institute of Geophysics and Planetary Physics at Scripps.

problems, and that included, well at one time I think it included some of the kelp people, as well as certainly Clint Winant and Bob Guza, and Rein Flick,⁸⁰ all doing some aspects. So, it did work briefly, but it didn't mean that we all sat down and went out together, and had parties together or anything like that. It simply meant that we had a common interest in the world's coastlines.

Harkewicz: Uhm-hmm. But you said that it failed. So, did you get any part of what you wanted?

Inman: Well, not beyond what I've just told you already happened. And, as I say I was really amazed at the geologists' stated feeling that they thought I'd deserted them. "We thought you were a geologist and here you aren't." And that was at a time when there was a lot of abrasive feelings anyway, between physical oceanography and geology. And I was again thinking, "Well look, guys, you just have to have both." But, they took my activities of starting a center here as taking myself out of geology rather than trying to bring geology, chemistry, and things into a center. And that's been the place where it has failed. In other words, it failed largely because people thought that when I started this that I was trying to get them to move over or that I was deserting their discipline rather than trying make them interdisciplinary.

Harkewicz: You said that they said, "When you're ready to come back we'll welcome you back." What was your reaction to that then.

Inman: My reaction just last Monday was to go and have coffee with them. [*Laugh*] I've always had good interactions generally. It's just simply been that they thought I was the guy doing the wrong, not them.

Harkewicz: Okay. Okay.

Inman: I've been involved, trivial perhaps, but in two buildings here. One is the Center for Coastal Studies, which we did ourselves on a \$48,000 budget so it wasn't major capital improvement so we could do it. But the other one was the Hydraulics Laboratory. And the Hydraulics Laboratory, again, was a Revelle effort to get—and I was very interested in getting a hydraulics laboratory that would address coastal needs where we could have some of the important things, not just ocean waves coming in, but the edge waves that move along the coast, a concept that was developed here by Carl Eckhart.⁸¹ Revelle was interested in seeing a buildup of that aspect as well, and we had an effort here which involved both ONR and the new National Science Foundation. And they jointly funded the Hydraulics Lab and several other buildings around here, and I was most interested in the Hydraulics Lab, and that was the part of the grant that I wrote and got it funded. We ended up here with this large building with this sort of wavy roof,

⁸⁰ Reinhard Eugene Flick (1948 -), research associate Center for Coastal Studies at Scripps.

⁸¹ Carl Henry Eckart (1902 – 1973), physicist, director of Scripps from 1948 – 1950, vice chancellor of UCSD (1965), pioneer in underwater acoustics.

and it was a lot of floor space. I was due for a sabbatical. I got a Guggenheim Fellowship and went to the hydraulics lab at Wallingford, England, mostly just to do something. And also, Bagnold had set up the Hydraulics Research Station at that point and I knew him and that this would be a good place to interact with him. Of course, he was then retired as a Kent gentleman farmer. The whole point of the sabbatical was to learn something about the hydraulics. And I think that some of the better aspects of the Hydraulics Lab did profit from my doing that.

Harkewicz: So, what research has been done with it?

Inman: Well, the very first one, which goes back to the interdisciplinary approach, is that I wanted a situation where we could do biology, geology, coastal processes. Not geology in the earth sense but in the smaller sense. So, I made sure that it had both sea water and fresh water, and that's a most unusual thing for a lab. And in fact in, I'll tell you about two experiments, both very interesting.

One is that the biologists wanted a large tank that had some depth to it so we have thirty-foot depth and ten-foot width to that tank up there, and the idea there was to see the interaction of plankton with light. And so we had a situation where they wanted to irradiate light. They got these great big search lights and then would filter the light that came in. But a lot of it was done at night so they'd shine this down towards our deep tank, and the first thing we know we're getting a lot of grumbles from people on Mount Soledad. The light was leaking out, and people were asking "What are these guys doing?" [*Laugh*]

Harkewicz: Those crazy Scripps scientists? [*Laugh*]

Inman: But it turned out to be a very interesting study and somewhere along the line I've forgotten all the guys that were working in it, it was one of the first real studies of different kinds of light and their effect on plankton and plankton blooms, which has been something of interest here all along. Then I remember another interesting experiment with the biology group was that the first wave tank that I got was just a little tank about a meter, a total meter deep and fifty centimeters wide. And we were making waves. And of course they would go down the tank and there's glass-sided walls. The biologists wanted to study some surf perch. So, we put the surf perch in this tank and, of course, it was salt water, and it was very interesting. You make waves and you make them on a beach, even if the beach wasn't sand but just a sloping beach so that the waves broke and were not reflected, the fish would understand that and they'd be quite happy and they would orient themselves in the direction of wave motion. And nothing really upset them very much. But if you put a wall, like a rock cliff or something like that, and then waves coming down were totally reflected they got very upset. One of them jumped out of the tank. And it was leading towards the study of just how the lateral line in fish is used to determine directions to underwater objects.

Harkewicz: Would that be useful in placing things like piers?

Inman: Well, first off it's very useful in understanding fish and how some can sense one thing or another. We had a very large tank that allowed you to slope the beach or study edge waves and we had a number of graduate students whose first thesis defense was up there. Tony Bowen's⁸² thesis defense was up there. He was at the hydraulics research station at Wallingford and came over here and worked on these projects with me. And so the combination of biology and wave and current and sand interactions has been a strong point of this lab all along.

Harkewicz: Do you think coastal work is easier to replicate in, or experiment with, in the lab than some other types of oceanography?

Inman: Well, I've often preached that scales are very important and when you can scale something then of course you have a chance of beginning to duplicate it. If you can't scale it properly then you don't. And most hydraulic modelers don't give sufficient thought to the scaling problems so that mostly they're measuring something but it may or may not have a reality in what's out there. And I think that that's something that I've always stressed. But if you can scale, and we did scale, and Guza's thesis was on the generation of beach cusps, for example. Tony Bowen's was on the circulation around and rip currents. Then if you can scale them and work up from there it gives you insight. And then you go out in the field and measure them in the field, and you begin to know how much interaction and reality there is between the two. And in seeking that reality and the change in scales you get a much better insight into the phenomena. Why beach cusps? You have a beach cusp up there that you're going to make that's two or three meters long and doing it with waves that are ten, fifteen, twenty centimeters high, and you can control the slopes and think you understand it. Then you come out here and measure the same cusps out to the ocean and see what's happening. And if, in fact, the forcing is, has sufficient similarity then you know something about this problem, and you can control it up there and it's a useful way to study it. On the other hand, there are many things in the ocean that just can't possibly be studied in the lab. And to some extent a lot of the wind waves that have directional and frequency spectra just can't fit in wave tanks, there's no way you could make a good study up there of all of their aspects.

Harkewicz: But when, you said before that this was another opportunity to try to do some sort of interdisciplinary type work, and you talked about the biological oceanographers, using these wave tanks and things like that, but it sounds like there was a lot of physical, at least physics, involved? Did you get physical oceanographers involved with the hydraulics, too?

Inman: Oh yes. I'm just mentioning the biology because there wasn't that much done in interaction between hydraulics and biology at that time. So, that's why I mentioned it, but most of the things that come out of there are waves, currents, and so forth. And so yes, the other thing that I started right away was a big

⁸²Anthony John Bowen (1939 -), physical oceanographer, Dalhousie University, Halifax, Nova Scotia.

computer bank up there so we could both measure things and start analyzing them. And some of the first early computers when we were doing wave spectra were done up there. Walter Munk and others were working on these projects. The point was it is not only designed for coast work but it is also an interdisciplinary facility and always was intended to be. And it's really served its position very well in that sense.

Harkewicz: And that was in 1961 or thereabouts?

Inman: I know '61 was when I went to England on a sabbatical and we had then gotten assurance we had the money and we'd already decided on the first building designs. And then I came back here and began to set up the facilities one at a time. The first graduating class of students at UCSD had one of their parties down here. Well, they had their party there and it was quite a nice bang, but then the next year when they decided to do that again I thought, "Maybe I better build a few more facilities in here," because I didn't think it was really intended just to be a dance floor. [*Laugh*]

Harkewicz: I see.

Inman: It was also where we held Roger Revelle's going away party.

Harkewicz: Well now that you mentioned it, I know that there's at least this mythology about Scripps, and parties, and people getting together and doing things a lot. Were you involved in that at all? Is that for real or . . .

Inman: That's for real. We had big parties. We were hard drinkers, but as I say, no drunks. We were responsible for what we did. It was very different than it is now. We were all responsible people and we had lots of parties. We had lots of interaction with the rest of the world. And, in fact, I think one of the things I haven't mentioned is that early on I wanted to, before I had the hydraulics lab going, I started this idea of taking my class, I taught a class in coastal processes, and it was in May, and I would take them down to Baja California, to the Gulf of California, and this was also enabled by the women's organization, which is called Oceanids,⁸³ and they were helping to interact with the group in Ensenada. We still interact with them, CICESE,⁸⁴ and they set up lectures between us and people in Ensenada. And that led to my having a joint field trip because of the international problem of crossing the border. We'd spend a week working in the Gulf of California, but we would also call it a joint field trip between the Mexican groups and the Americans. And we went down there every year and this went on for fourteen years, and it was highly successful. All of my students got a chance to look at these pristine beaches down there, and also added an aspect we don't

⁸³ Oceanids is a UCSD organization promoting friendship and services to the UCSD community. They publish the monthly newsletter *Bear Facts*.

⁸⁴ Centro de Investigación Científica y de Educación Superior de Ensenada (Center of Scientific Investigation and Higher Education of Ensenada).

have. They have ten meter tides at the head of the gulf and that was an interesting change. And we did this until the *Los Federales* found out about it. And I'm saying it in that sense because as long as you keep our State Department and the federal government of Mexico out of the picture and only interact with the people it works very well. And so when we were interacting with the university in Ensenada and they were joining our field classes and we'd simply go down on normal crossing visiting visas. Everything went very well. It wasn't until they started hearing about what we were doing, on a federal level, and then one time the Mexican government found out, the Mexican Army actually, that we were out here making all these surveys and they came out and wanted to close us down. And they finally did by simply requiring that we go through our State Department to their State Department. And when you do that we found out that our State Department said "Sure we can, but we want your students to get a visa six months in advance." Well, how can you take a class that hasn't even enrolled yet and do all this in advance? You can't do it. And so, that in itself made it impossible to go. And so, as I say, as long as we could interact directly with the people, we did and we had a wonderful time down there. Now, it's been a long time since I took a class down there. But these were wonderful interactions. A week on the beaches in the Gulf of California with a student class and everyone learned more and had a wonderful time. Of course, we always ended up with a big party at the last night there and it was quite an endeavor.

Harkewicz: This was another one of the cases where security measures caused problems with the science again?

Inman: Yes, in fact, frequently if you worked as we did and Giff Ewing⁸⁵ had a plane. He was a guy here who had a Grumman Super Widgeon and it would land in the water down there and we set airfields throughout Baja like in Guerrero Negro and at Bahia de Los Angeles, and places like that. And as long as you can interact with the people, and even their local government. For example I've had the Mexican sheriffs come out and say, "What are you doing here?" And we'd talk to them. As long as you're willing to talk to them, explain what you're doing you have no problem. But as soon as start bringing in your State Department and their State Department, you're in trouble.

Harkewicz: Okay. Similar to your experience in Israel and Egypt?

Inman: And so that was our field class. And, as I said, it went on for fourteen years until the State Departments finally found out about it and that killed it.

Harkewicz: Well, then, the other thing you said that you wanted to talk to me about was the, your involvement in Vietnam?

Inman: I was politically dead set against the Vietnamese War. There's no one that felt any deeply more so than I because I had been over there, teaching a UNESCO

⁸⁵ Gifford Cochrane Ewing (1904 – 1986), physical oceanographer at Scripps.

class in 1959, and it was a class designed to bring in the people in Southeast Asia to Vietnam. And that class was also part of the International Geophysical Year, and so I was fortunate they landed a jeep over there. And Scripps ships came through and they were involved with this class, too. It was a UNESCO class in marine science conducted to bring the Southeast Asian countries up to some level of understanding, and it was held at the old French Oceanographic Center in Nha Trang—that part was eerie. Here were all these wonderful chem labs and things with not a soul touching them and no one had for years. That was a UNESCO-sponsored situation and we participated in many of those in the early days where Scripps people were very involved. And, in fact, it was from a UNESCO-sponsored situation in Turkey that I was on when I heard that I should stop by Israel and look at what I described last time [we talked] involving the Egyptian-Israeli peace situation. In the Vietnam case, I was there in '59, long before our war, but it was clear things were shaky in the sense that we had a military advisor group, not right where we were but further over in Nha Trang and when we came back one night they had been shot up pretty badly because there was infiltration from the North. But getting back to why—I was against the war principally because had we supported the Vietnamese as we should have after World War II instead of leaving them then this wouldn't have happened. What happened is we left them, Ho Chi Minh was only after Vietnamese independence and our discussion to return to Vietnam to the French, versus the Russian's continued support for Vietnamese independence is what caused all this problem. So, it was an impossible win, it was a lose-lose situation. Having said that then the problem was, here we were totally involved in it. And I was approached by the Navy because they were having trouble getting ships in and out.

Harkewicz: When you say “we were told,” you're talking about Scripps being totally involved?

Inman: Scripps was involved. I was involved. And so what they asked me to do is go over, and I did do this, and site harbors for the coast of South Vietnam. So I was very involved, to that extent. And, in fact, I wrote a significant paper which was used for years by engineering groups everywhere on how to site and maintain harbors. And so it served a big point there, but this meant that I was now recognized by the students on the upper campus as part of the military-industrial complex. And the two they picked out were Walter Munk and I, and I'm not sure what Walter did, but I know what I did. I tried, when they had these talk-ins early on, to talk to them. But if you'd been doing these things we were I found out you couldn't talk to them. These students were not willing to listen. “You're working for the war effort. You're pro war. You're part of the industrial complex. You're a bad guy.” And that's just the way it was.

Harkewicz: They didn't want to hear what you had to say, then?

Inman: And so Walter Munk and I were frequently written up as part of this complex. And true, I was over there many times, probably a dozen, on and off and it was a

very difficult, a very trying situation. The hazard over there was very great and the Vietcong didn't like this idea of people siting harbors over there and so we were under a lot of fire and all. So it was a very interesting, very sad, experience, and it's difficult to be neutral in a situation like that, particularly when you're on campus as I was. And that's why I mentioned earlier that it was such a fortunate thing that the students were, at least the organized students, were on the campus some distance away from us, because otherwise had they come down, here where the technicians were, they were ready to have a combat with these guys.

Harkewicz: The technicians were ready to fight the students?

Inman: Absolutely. In fact, I found they were wrapping pipes in paper.

Harkewicz: The technicians?

Inman: Yup.

Harkewicz: Hmm.

Inman: They were going to defend their right to do what they do, science or else.

Harkewicz: So, how did you feel about that on a personal level? You said you were against the war, and yet you were . . .

Inman: I was dead set against the war and yet I helped site harbors because I felt that I can't sit here and have this knowledge and not apply it at all and let people get killed over there because they can't get in the right places or get their ships in or out. So it was a very, very frustrating position to be in. And then come home and have people say you can't talk to them, you can't explain your position because they won't let you. And then we had this guy, Marcuse,⁸⁶ who was leading them and it was very interesting because he did come down and he did talk to us at Sverdrup Lecture Hall and we made him look like a fool and he was.

Harkewicz: So, he talked *with* you or talked *to* you?

Inman: Well he tried to take over. He came down to talk to us and it was largely populated by our faculty, students, and what have you. And when we talked to him, he really finally threw up his hands and said, "Well, this is . . ." And left. What he had hoped was he was going to have a big body of the followers but we had already filled the auditorium and they couldn't get in. And so if you talked to the scientists, and people like myself could, for once, say what we really thought, there wasn't some group to shout us down. And so it was a much different happening.

⁸⁶ Herbert Marcuse (1898 – 1979), German-American philosopher and sociologist and a member of the Frankfurt School. Marcuse was a professor of philosophy at UCSD from 1965 – 1976.

Harkewicz: So, what you thought was similar to what we were talking about earlier, it was sort of the idea of having scientific knowledge that would be useful and it would be wrong not to use it?

Inman: Absolutely. I mean, I went to Vietnam with the Sverdrup-Revelle concept firmly in mind. I can site harbors. I can take a look at a coastline from the air and pretty well tell you where you can put one and where you can't, just because I've had this special training in this particular field. And I used it, and I used it for my country or the Navy, or for the war. You can call it what you will, but that's what I did.

Harkewicz: Okay. Well, you know, this seems a good place for me to ask my final questions that I try to ask all my interviewees since you sort have come back to where we started today. What do you think made Scripps succeed?

Inman: What do I think made Scripps what?

Harkewicz: Succeed.

Inman: Succeed?

Harkewicz: Yes.

Inman: A combination of things, but clearly one was the leadership beginning with Sverdrup. If you go back through Scripps history, you'll see that some of the directors here were aware that it started as tide pool biology and that it should expand a bit. None of them had the vision and the knowledge of the world's oceans to make it oceanography. Sverdrup did. And the other thing that Sverdrup did that was so important was he wrote the book, *The Oceans*.⁸⁷ And *The Oceans* brought in the biology, the chemistry, and the physics of the ocean and right there you established the interdisciplinary nature of the ocean as a field of research. Most of us early oceanographers in these classes were educated on that book. It's a thick book but it's all in there. And that was followed by Roger Revelle—they're so different. Sverdrup was quiet, scholarly, got these things done in the big sense of writing a book like *The Oceans*. That's not a trivial contribution. And he was a good teacher. Roger was quite different, he was a visionary. He galvanized all of us to do something and do it right. He could really convince you. He was a wonderful speaker. He wasn't the best teacher. I remember he was teaching something and the equations wouldn't balance . . . ##

Harkewicz: ## So you were saying that Roger was balancing equations...

Inman: So, I said that he was not a well organized teacher but he was a tremendous leader. And as I say, I came here largely because I heard Roger talk to our geology group at San Diego State about the Gulf of California trips. He was really a fascinating, charming speaker, and a leader. Almost every student I ever

⁸⁷ See footnote # 5.

knew here really adored him. There weren't many people who didn't, except some of the older faculty here. They resented him, many of them. And that's just because that's the way things were. He was young. He was ambitious. He wasn't scholarly—he was very scholarly in the general leadership sense. He was first to point out the CO₂ problem. I mean, this is not trivial, and get a guy like Keeling⁸⁸ working on it. In fact, without Roger saying to Keeling, “Look, you got to start this and you got to keep it going” and “You got to set it up somewhere where you can,” Keeling wouldn't have been doing all this. Now, once he got onto that track and started doing it, then it was Keeling's whole bit. But Roger's the one who got him started and pushed in that direction in the first place. And so you have these giants like Sverdrup and Revelle and that has to be a big reason why you succeed.

Harkewicz: Okay. I just want to ask you one questions about what you said about people being against Revelle, and I think I heard from someone that Shepard wasn't too keen on Revelle?

Inman: Oh, Shepard was very resentful of Revelle. Revelle, by discipline, was a geologist. Shepard was a geologist. Revelle, though, looked at the big overall pictures of science, and was really a basic person and an interdisciplinarian in that sense, and he mastered problems of chemistry and atmospheric physics, and all of these things, and was a leader and came here. And guys like Shepard, who were descriptive—and I've told you about writing his book, I mean chapters in his book. I don't remember whether I mentioned that or not?

Harkewicz: Yes, you did. And then he took them out later on.

Inman: Right. Yeah. So, you have two very different people. One of them was senior and thought he should be respected more and Revelle, who was mostly involved at trying to get this into a world concept, and they didn't get along at all. But, I should say that it's not just that Revelle was much more open and aggressive in what he was after and seeking. I don't mean abusively so, but just “Here's what we have to go and do.” But Sverdrup didn't get along too well with Shepard either.

Harkewicz: But, here Shepard was your advisor...

Inman: Yeah. And that put a real brunt on me. And so I was doing this course. But I didn't find it was too difficult because I had come here at a time when Shepard's field was just opening and I was the first one to start trying to expand Shepard's part of it out into the Revelle concepts.

Harkewicz: I see.

Inman: And that's why I had two chapters in his '63 book, and Ed Goldberg had a chapter in there on chemistry, geochemistry.

⁸⁸ Charles David Keeling (1928 – 2005), Scripps geochemist.

Harkewicz: So you were kind of a bridge between the two?

Inman: I was beginning to be a bridge.

Harkewicz: I see.

Inman: But this doesn't mean that Shepard liked it and he didn't, and it did make it very difficult for me at times. And I suppose he had annoyances with me. Here I was his student, and yet I was tending to side with someone like Revelle, whom he really didn't like. So it made it very difficult in that sense. And I'm sure that I upset him a great deal. I know he made the whole situation difficult for me.

Harkewicz: I guess so. So, I asked you what you thought made Scripps succeed. And, you talked about Sverdrup and Revelle. Now, I need to ask the other side, which is "What do you think has threatened Scripps' success, or would threaten Scripps' success?"

Inman: Well, it's obviously been threatened or it wouldn't have had all these budgetary problems. And I think the biggest threat to good science here is our size. I don't think, and I'm not saying you should turn around and fire all us oldies, or that you shouldn't bring in new people—trying to keep up with the advancing world requires you to grow. But maybe that isn't the best way to do it. But there's been one other factor which I personally have been very upset about—Scripps, in the later years, because in the early years women weren't at Scripps. They could be secretaries. They could be something like that, but otherwise they weren't. And oceanography wasn't a woman's realm. You can stay at home and raise your family and so forth, and if you want to contribute like they did in Oceanids, that was good too. But as women's roles became more obvious and oceanography wasn't the place for them. Now we have a woman as chancellor,⁸⁹ and we certainly have one being considered for director and all the rest of it, so things have vastly changed. But the thing that hasn't changed, and that I'm seeing this through my postdoc, is if you have a marriage within a science family then you can't have one be at Scripps and the other be at Woods Hole. That kind of family doesn't work very well. There has to be some provision. And almost all universities, except Scripps as far as I know, have begun to have spousal appointments. That's why my postdoc, Peter Adams,⁹⁰ is not going to stay here. He's got a good, not a faculty, but a good academic position and could become faculty later, but his wife is already on the faculty at the University of Florida and they sort of agreed that whoever had a faculty position first would decide where the other person went and she started it. And the University of Florida has faculty arrangement so that, when you have one member as faculty, they can then put

⁸⁹ Marye Anne Fox (1947 -), named as chancellor of UCSD in March 2005. Fox trained as a physician and organic chemist prior to her academic administrative career.

⁹⁰ Peter Nelson Adams (1971 -), assistant scientist, Department of Geological Sciences, University of Florida, Gainesville. Adams did his postdoctoral work at Scripps from 2005 – 2006.

your spouse on a faster track if he warrants it. And so he will go there and, I'm sure, eventually, get a faculty position there. That's taking my last big efforts at coastal morphology and coastal understanding from a postdoc that I had hoped was going to stay here.

Harkewicz: And he's taking that knowledge to Florida?

Inman: Yes. He's taking it there. And I think this is going to be true all along unless we wake up to the fact that there are marriages within oceanographic groups and families like this, and make some arrangements for it, you're just not going to get the cream of the crop. They aren't going to come. Why should they?

Harkewicz: Is it different up at the upper campus?

Inman: I can't tell you because I don't know for sure, but he wasn't upper campus and it was certainly not different down here.

Harkewicz: Can you venture a guess as to why that's the case?

Inman: No. I just don't know. In fact, when I got this last four years grant, which was a mistake, but that's a separate problem, and I wanted to involve my wife, it was all hell on wheels to do so. And, finally, we had to find another administrator and bring him in, and thank goodness to him. And so he split the thing. It's messy here. If you have a wife—it's easier if you're outside and they really want you here and then they might make some arrangements that way.

Harkewicz: But if you're already here?

Inman: But otherwise they won't.

Harkewicz: I see.

Inman: And, as I look around that's hurt us a lot, we would be a stronger institution here if we had something like that, but we don't. But that's not the real basic problem and didn't answer your question basically, and I think that the problems are so complicated that it's not just a Scripps problem at all. It's a societal problem. And our societies, and to some extent the European societies versus the new societies coming up in Asia and so forth, and the complexity of our lives. I don't think that we can all continue to stand the bureaucratic load that we have. Something's got to give. And, I don't have good solutions. I can give you individual instances of small ways to improve things, but, the big problem is going to be to solve societies, and concepts like whether institutions should or shouldn't be involved in getting their science out before the public are all essential, but, as to what Scripps future is, I don't know.

Harkewicz: Well then on a final note, and I know we've talked about this for almost four hours now so, but I'm going to ask you if you could put it in a nutshell, what do you think Scripps has meant to you?

Inman: Well, Scripps has meant a great deal to me simply because it was such an ideal place to be. And I can say it was an ideal place to be almost up until the last decade. The last decade, I wouldn't say that it's been an ideal place to be. I think it's been—and you can say, “Well, he's just got old.” [*Laugh*] And that could be part of it certainly. But generally speaking, as I've said, before the bureaucracy, and we have lots of rights in this country but you need a lawyer to sort them out. So you don't really have lots of rights, and that's the whole societal problem. We have lots of rights and lots of things at Scripps, but there's a rule for everything and nobody personally is responsible. And so in the old days, we may have been hard drinkers but we were responsible people, versus the new days where hell, you're not hard drinkers but everybody may be on something else or some other substance, but nobody has any real responsibility, or if they do, they can't exercise it. And so, we have all these rights but we can't exercise them. And as I say, in civilian life, if you have lots of rights but if you really want to make sure they're upheld then you need to hire a lawyer. Nothing is simple anymore. And everyone's under stress, which of course is really strain not stress. But nevertheless, we're all strained to the max. And I could look around and say, “Well, something's wrong in this world and it's either going to start finding some solutions or we're all in for very serious trouble, not just the universities.” The whole damn place. The country. Europe. The whole bit.

Harkewicz: Well, on that sad note, [*laugh*] perhaps we should end this for today. ##

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