

The following three paragraphs are moved from 00:15:15 in the recording:

Dewey Livingston: This is June 25, 2009. This is an oral history interview with Dr. Robert Schmieder who goes by Bob. I'm Dewey Livingston, the interviewer, and Jennifer Stock from the Cordell Bank National Marine Sanctuary is here as well, and first would you spell your name?

Bob Schmieder: Well the first name is spelled B-o-b, and the last name Schmieder is S-c-h-m-i-e-d-e-r.

Livingston: All right, and this interview is part of a series undertaken by Cordell Bank National Marine Sanctuary, which is part of the National Oceanic and Atmospheric Administration, NOAA.

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Bob, first talk a little about your personal background just briefly, could you please tell about some of your background like your birthplace, date if you're willing, hometown, education even up to that point?

Schmieder: Sure. I was born in Phoenix, Arizona, tenth of July, 1941. My dad was a watchmaker from Germany, came to America as an immigrant through Ellis Island, went to Chicago with his two brothers and sister to settle in America, but my dad contracted tuberculosis so he was sent to Arizona to live in a dry environment. The treatment in those days was just complete bed rest in a hot, dry environment, so he lay on his back in a bed for more than a year, year and a half in a TB sanitarium. When he was able he set up a little watch repair business.

My mother was born in Arizona in a little town called Superior, a mining town, and became a schoolteacher, got a college education and started teaching school. She went to China on a trip and her watch got wet, so she asked her older sister how could she get her watch repaired and her older sister happened to know of a good watch repairman, Otto. So Mom brought her watch to Otto the watch repairman and they agreed to have a swimming date the next day, and within three months they were married. I had an older brother three and a half years older than I, name was Carl after the man who had sponsored my father to

come to America, and then I was born in 1941 and we had a sister Linda who was born in 1950 almost ten years after I was born.

So I grew up in Arizona, went to Kenilworth Elementary School, which is on the national record of historical landmark places now, West Phoenix High School and then went away to college and was a visitor in Arizona ever since. So I went first to Occidental College in Los Angeles. There I got a wonderful, wide, broad general education, general arts, and then I transferred over to Cal Tech in Pasadena not too far away because since I can remember, since early childhood, I wanted to be a physicist and Cal Tech was the number one place that I wanted to go to school. I was able to do that, so I graduated with my bachelor's degrees from both Occidental College and Cal Tech simultaneously the same weekend, a Friday and a Saturday graduation.

That summer I got married and then we moved back to New York City where I went to graduate school at Columbia University and I was there for five and a half years. Two of our three children were born in New York City and after the five and a half years I completed all the requirements for the masters and PhD in physics, and then I set about looking for where I could have a career.

Livingston:

Thank you. Did you have any particular personal interests other than diving when you were younger that might've related to these future experiences that you ended up getting into that we'll talk about?

Schmieder:

I did a lot of activities as kids do but not a lot related to the exploration except that somehow I got a fascination with exploration in general, in the general sense of the term, meaning you go somewhere and it could be a physical where or it could be an intellectual where, but you go somewhere where people have not been before. It sounds a little like Star Trek, a lot like Star Trek, so this was what motivated me about doing physics because we would discover things. So many areas including physical exploration, geographic exploration, are exactly the

same experience. You want to discover something. This is fun, it's useful, and it certainly is part of my lifestyle both in my scientific work and in the exploration work.

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Dewey;

Could you tell us about your career and then how it might have influenced or helped your experiences with exploring Cordell Bank?

Schmieder:

Well my career started I guess when I finished my PhD in Columbia in physics and I went to the Lawrence Berkeley lab as a post-doc, and I had a very great opportunity to do some work in the field of atomic physics using one of the very large accelerators, the linear heavy ion accelerator. This accelerator had been developed by a man named Al Giorso who continues to be a personal friend to this day. He's 93 years old. It was used to discover some of the new elements, the transuranic elements, so it was an extraordinarily exciting physical place to be. Al used the north site of the beam lines and I had the south beam lines, and so what I did in those years together with my advisor of course, I was just a post-doc, was we did experiments to produce new kinds of atoms, not new elements, but these are atoms that have lost a lot of their electrons, maybe lost 20 electrons or so, and they have at the time new and interesting atomic physics properties, x-ray, emission properties and so on, so we were exploring that.

Eventually post-docs run out and you have to get a real job. I spent a year as an instructor in the physics department at Berkeley. That was tough. I had the responsibility for a couple of classes and I discovered then that I really would rather do research than teaching because teaching was way too much work, so then I really wanted to stay at Berkeley as a full-time staff member at Berkeley, but there was a hiring freeze at the time so my best option, and it turned out to be a good one, I looked at the Lawrence Livermore Lab and Sandia National Laboratories and I decided to go to Sandia. I got an offer from there and so I did, and I spent 25 years as a research physicist at Sandia National Laboratories.

- Livingston:* Could you tell us the general point in time that you're talking about when you were in Berkeley?
- Schmieder:* Yeah. I was in Berkeley from 1969 until 1972, so I had been in graduate school from '63 to '69 – actually late '68 when I finished my thesis. '69 through '72 at Berkeley and from '72 onward up until 1997 at Sandia Labs, 25 years at Sandia.
- Livingston:* All right, so you were at Sandia when you were out doing these expeditions.
- Schmieder:* Yes I was, and I can explain how I was able to do this maybe for the first time ever. I'll blow my cover here. We were given at Sandia five weeks of annual vacation in advance. Each fiscal year I suddenly would have five weeks of vacation time that I could spend as I like. I could squirrel it away and use it on weekends here and there or wait until the end and blow it on one big trip, and what I chose to do during all those years was use it in times when I would schedule expeditions, and it was a sufficiently big chunk of time, five weeks, that by being very parsimonious about it and not spending it on other times I could actually plan and then carry out the expeditions and maintain my secure status as a staff member at the lab.
- Livingston:* So while you were working at Sandia or even your Berkeley experiences, were there any inklings in there or experiences you might have had that you could've foreseen that you would've been heading out into the ocean?
- Schmieder:* Yes. There were precursors. Well I'll tell you the moment of my epiphany on this. It was in 1953 when the film *Kon-Tiki* came out as a film in the theaters. This was of course you know the raft project by Thor Heyerdahl and five others from Norway and this film was beyond magic to kids like me. I would've been 12 and I can tell you not only I but thousands of other people have had exactly the same experience. They saw that film and their life was completely changed. Mine was, and I knew from that that I would be deeply interested and very excited about doing that. It was such a romantic image and it's so anachronistic as we came into the second half of the 20th century
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to think of people doing exploration and yet here was an event that occurred.

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The ascent of Mt. Everest by Hillary was not nearly as motivating to me partially I think because people climb mountains a lot. You know sort of what the task is. Here Heyerdahl had identified a task, namely to demonstrate the possibility of a migration route for people and therefore the possibility that Oceania could've been populated from South America, not evidence and certainly not certainty, but in a sense this was a much more creative research idea than climbing a mountain, and because of that it appealed to me more because by that time I was already interested in research, whatever the field. In some sense it didn't matter whatever the field just as long as it was research.

So having seen this film in the theater I never again thought that I would do anything else except first of all be a physicist, and secondly be an expeditioner, explorer, but I could make the sequence of getting my education and a job the career of doing physics. I could make that happen. I knew how to do that. I didn't know how to become an explorer so I didn't do much, although now and then I motivated a project. One of them had to do with trying to photograph the very deepest parts of Lake Tahoe. I developed kind of a theory that animals might have fallen into the lake over the course of time and that their bodies would've migrated to the deepest part so there would be this fabulous collection of bones at least, bodies maybe, and they would be rather localized and all you have to do is go down 1,700-1,800 feet and there they are.

Well in those days there were not submersibles and ROV's and deep water camera cases and so on, so I developed a proposal, a plan, and I was not able to carry it out. In fact I got a little bit of pushback from professionals, which I subsequently found is not so uncommon, but that was a precursor and it was an example of sort of trying to get into an activity involving expeditions. There were some other things. I was always wandering off trying to collect something or find something. I would even make a joke and I still do to this day.

Just this past weekend we got kayaks and we paddled into Emerald Bay at Lake Tahoe, so I remarked as usual, “Well this seems to be the first time this place has been visited by white people”, which is of course politically incorrect but historically accurate. That’s what people said. Of course there were hundreds of boats around there, but you see my attitude. We are discovering a new place. So there were precursors, yes.

Livingston: Out of curiosity when you were interested in the bottom of Lake Tahoe and what was there, is that during the time you were in Berkeley?

Schmieder: Yeah it was in fact. The idea occurred to me long before that, but by the time I got to Berkeley as a post-doc other than having to deal with raising a family and a house in Walnut Creek, mortgage and so on, I found I had a little bit more time to start thinking about it and so that’s when I started trying to do those things. That led around that time, 1971 or so, to getting certified for scuba. Just one day I decided, wow, I actually had a friend who was a scuba diver and he showed me some pictures and I said, “Wow; I can do that and I would like to”, so I got certified.

00:15:15 [Introductory statement moved to beginning of transcript]

Livingston: Now to go on, could you tell about your interest in diving? You mentioned just then a little about it, but before the Cordell experiences, and maybe talk a little about some of the places you dived and activities or projects, something about your diving?

Schmieder: Sure. I got certified through a local school called Brawley’s Regular School and the tradition and what I did was get checked out in Monterey on the beach down there. Literally thousands and thousands of people went through that and continued to go through similar kinds of programs. There was nothing remarkable about it. It was very exciting to me. I was really motivated and into it because it was satisfying my desire to do something different and challenging that not everyone can do. You know it’s a lot easier to be successful at something if you don’t have so much competition.

What I have tried to do is identify an area that I could go to, area in general, not necessarily a physical area, where the competition thinks that they don't want to go. That makes it easy. So in learning to dive, that was fun for me and motivating and I was able to start learning about some of the things I was seeing, learning the marine biology, the Latin names of many of the organisms, a little bit about their behavior, what they do. For example certain anemones are very aggressive toward others and we learned that, and I had a lot of fun. Probably 20 times a year, 30 times a year I would go with my buddies. We had a small dive group and we sort of dived together. It was all just plain sport diving. We're going to go up to Monastery Beach, we're going to go up the coast to Salt Point.

Although some did, we didn't dive in San Francisco Bay, sort of default, no real reason for it. The visibility is not good, but the places that we did go were fantastically interesting and eventually I started getting familiar with the environment and then asking a different level question. Not only what am I seeing, but what does this all mean? How is this integrated with the larger picture? Has anybody ever been here before? Are we really the first people to see underwater at Monastery Beach? Of course the literal answer to that is no. The answer for me was of course we're not the first, but there probably are places where we could be the first, and if we are the first in doing something like that we are guaranteed to discover something. This was my imperative from childhood.

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I would be happiest, maybe only happy, when I am in the process of searching for something, discovering something. So as the two or three or four years passed I found that I was pretty much doing the same kinds of things we had done before, but it was not the same thrill to me to just go get abalone, have an abalone feed and say how wonderful this is. It became not unpleasant, just unsatisfying in a longer term, and that's what eventually led to my personal discovery of Cordell Bank and the whole evolution that resulted in the sanctuary designation, and now this wonderful entity that is the Cordell Bank National Marine Sanctuary.

- Livingston:* You mentioned diving Salt Point and places in the Monterey area. Did you dive farther a field, up the coast, down the coast, outside of the state?
- Schmieder:* No, not really. I kind of deliberately did not go off to the standard world class dive places, Red Sea, Cancun, Palau, and so on. Hawaii is not a good place to dive because it's in the doldrums in the Pacific, but I did not partially because I was spending my vacation doing other things and I had a family situation that didn't allow me to just get up and go on trips like that. So I was confined to the coast, and actually I now in retrospect prefer that because the cold water, the water along the California coast in common with some other places in the world is cold and moves a lot, and so it supports this fantastic invertebrate community, and because of that the higher trophic levels. That's what I found interesting and eventually I became really stuck on the invertebrates and the algae and central California coast. Northern California coast was where we founded and where I stayed.
- Livingston:* When did you first hear about the Cordell Bank and what did you learn in those first hearings?
- Schmieder:* Well I remember this so clearly. This process that I just described where I kind of evolved in my diving, I was starting to say is this all there is to diving, namely sport diving, and for many people yes, that's all there is. That's what they want to do. It was not for me. So by that time for about a year, this was in 1977 around that time, I was starting to get a little itchy, looking beyond the sport diving picture and saying, "Is there a project? Could I collect some data for somebody? Could I make a chart or a map or something for somebody? Can I do something that's useful and worthwhile?" Because my day job is as a scientist, this is the process I know. You go somewhere, you observe something, you document it, you preserve it, you write about it, you share it with people and you carry on with that kind of intellectual metabolism, so I was really ready. The event that triggered me was a couple of articles written by a reporter for the *Oakland Tribune*. Fred Garretson, we called him Skip, he was the science reporter and he was a very good one, so he published
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a series of semi-expose articles about the radioactive wastes that had been dumped in the ocean near the Farallon Islands, and it led to quite a stink if you like, a public response and eventually governmental response with submersibles to go out and find these drums of waste, and there were inflammatory reports about giant sponges growing on warm drums containing radioactive materials.

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I knew that was all nonsense because I had worked not only at Berkeley where most of the material had come from but also at Livermore, and there's a lot of radioactivity and as a physicist I worked with radioactivity and radio chemistry, so I knew that these were not really dangerous materials and yet there it was. So voila, there is a project. Could I go out as a physicist and a diver? I had the right combination of preparation. Could I as a physicist and a diver go out and shall we say examine these things, document them in some way, collect some data? Then I would be able to make measurements. I knew about instrumentation. I knew about radiation counters. I know about the activity. We could take data, we could analyze it, we could find out if this is a problem or not and that would be a useful thing for me to do. It was a nice project.

That's where I was when I opened the chart to find out exactly where these wastes had been dumped off of the Farallon Islands in three or so places, and completely by shall we say a prepared accident, there were some contours to the northwest with the name of Cordell Bank, one contour of which was a small circle about a quarter of an inch in diameter containing the number 20. So I learned that that meant 20 fathoms or 120 feet was a sounding there, and that clicked because even though I had not yet ever dived to 120 feet I knew that in principle one could make at least one-way trips with scuba to 120 feet and we could maybe even return alive. My attention just shifted. I kind of abandoned Skip Garretson and the *Tribune* and the radioactive waste and I got interested in just asking the generic question, what is Cordell Bank? There must be a lot of knowledge of Cordell Bank at the Cal Academy and I was of course familiar with the academy and even knew some of the staff.

So I started asking questions. The generic question was, “What do you know about Cordell Bank?” and the inevitable answer was either, “Well, um, I don’t know, I use Wells Fargo myself;” or if they were a little more savvy they would say, “Yeah, it’s this place out there. Nobody knows anything about it. There’s no specimens from out there. We don’t know anything about it,” which was inflammatory to me of course. When I heard comments like, “We don’t know anything about it,” that was exactly what I was looking for. So the question was, could I turn that kind of a trigger into some kind of a project? The rest we’ll elaborate as we talk some more, but that was how it was triggered.

Livingston: So you’ve explained some of our next questions then. At this point then did you immediately have some goals with the idea of exploring the bank?

Schmieder: Sure. The reflexive goal was “what’s there?” Actually before that was, “what is already known about Cordell Bank?” For a couple of months I went on an odyssey to learn what was known about Cordell Bank. In fact the very first information I got other than “We don’t know anything about it” was at the Marin Civic Center in their library, and they had a copy of the *Coast Pilot*. *Coast Pilot* is the handbook for navigating waterways up and down the coast and in waterways. This particular volume of the *Coast Pilot* was written by George Davidson who had been on the west coast since about 1850 and had authored this *Pilot* in the 1850s as multiple successive volumes, and by now they’re considered historically valuable, but they’ve been revised, updated, and abridged so that now you can get a *Coast Pilot*, but it’s very utilitarian. In those days in the early volumes it had a lot of descriptive material.

So there I was in the library at the Marin Civic Center and I opened this book and it told me a lot of things about Cordell Bank, roughly where it is, roughly what size it is, and who discovered it: Edward Cordell in 1869. Of course that was like a bolt of lightning. The flash in learning something like that was not only a shocking thrill, but it implied that there was a lot more to be learned because this had been important enough. It was not

a neglected thing. It was something that had somebody's attention, serious attention, long ago albeit, but somebody really cared about this place and therefore from that moment on I really cared about it.

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From that point, that beginning, I then tracked around and started learning lots more about Cordell Bank, but I was only able to go so far with that until I came to the clear realization I would never get satisfaction on how much I wanted to know about Cordell Bank because nobody knew enough about it to satisfy me, and therefore sort of not on one particular moment but sort of emerging in that time was this concept not only must we go to Cordell Bank and find out what's there, but we probably can, but it won't be easy. So then I had a project and I can tell you I was very happy. Sure enough I had a project.

Livingston:

So please describe in as much detail as you're comfortable with the early planning of this first expedition including your initial research, which you've touched on already, organization of the expedition, any bureaucracy you might have had to deal with, funding, that type of aspect.

Schmieder:

Yeah, well this actually gives me a chance to put into this record some of the events that happened that I've never had the time/space before to relate, so this is a nice opportunity and I will at this point. I had the idea to go to Cordell Bank, explore it in the old-fashioned traditional sense that Thor Heyerdahl had the idea to do his Kon-Tiki raft trip on the Pacific in the old-fashioned shall we say anachronistic image of an explorer. I could do that because I had a day job as a physicist and I could do this. I could engineer this anyway I liked. That's the way I like to do it in the mold of Heyerdahl.

So my first step after realizing this was to get together with my closest buddy in our small dive group, a bunch of buddies that went sport diving. His name is John Hall. John was more experienced as a scuba diver than I was, so I went to John and I said, "I'd like to go to Cordell Bank. Can you help me figure out how to do it?" in almost those words. So we spent some days examining the project in detail and I learned a lot from John. I'm

going to give John credit for some of the ideas, the actual origin of these ideas, and I'll tell you what they are, but of course I not only grabbed these ideas, but like an amoeba I just incorporated them into my DNA and from then on that was the way the project was in those aspects.

So what John and I talked about was how could we go to this 20-fathom mark in the ocean and dive 120 feet and get back alive? The first thing John said was, "First of all you don't want any beginner divers. You only want people who are experienced and you're going to have to do a lot of practice for this. This is not a dive like we have been doing in our sport diving group where we go to Salt Point for a day and get abalone. This is going to be different." I think I already understood that, so we were in agreement on that.

Another thing he said was the equipment is going to be pretty critical because the depths, 120 feet is beyond the normal sport diving range, therefore we should do the following. The ideas were mostly from John, some from me, but together we came up with things like each diver should do only one dive in a day. We should require a decompression stop regardless. We should design the dives according to the U.S. Navy tables. Each diver should have twin 72 cubic foot tanks or larger. Each diver should have an octopus regulator. Exactly who annunciated those words first or second almost doesn't matter. We were jiggling each other and producing these. A lot of those words came from John's mouth first, but had he not said them I probably would have as well, so that was a joint creative effort.

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As you can tell, those features persisted all the way through the entire program that we did. Those happened within a day or two. So after two or three days of brainstorming with John Hall I felt that I knew enough about the mechanics to project what would be necessary to do an expedition to Cordell Bank and get back not only alive but with specimens and we hoped photographs and so on. I forgot to mention by that time I had interacted with staff at the Cal Academy and they disclaimed having any specimens from Cordell Bank with the one exception of a bag of greenish kind of mud, which G. Dallas Hanna had dredged off the coast in

the 40's I believe. The mud was dried and it turned out to be 100 percent foraminefera so it's a bio sediment, and I was able to examine that, but that was the entire extent of the holdings at the Cal Academy.

The Cal Academy would have been the expected place of record to house specimens and information about Cordell Bank, so having gone through the academy, searched through the academy and found essentially nothing, I knew that we had a valid project. We would not go to a lot of work, come back, and they would say, "Well you could've just gone into that room and found it all." We knew that was not the case.

So back to the preparations, after John and I talked it over I codified it into a plan and the next step I did was I went to a meeting of the Sierra Club Loma Prieta dive section. I was an active member of the Sierra Club. The Loma Prieta chapter had an active dive section so they would go out on sport dives on a regular basis and it was quite a large group of people. They would have monthly meetings. Maybe there were 20-30 people in those meetings and I had been to some, but I didn't go on a regular basis.

Once I had the plan I requested a moment to go to this meeting and announce these plans and solicit divers, so I did. I made a little speech. I showed a map of where Cordell Bank is. I said the target here is 20-fathom mark and judging by the diameter of the circle on this chart it's going to be a quarter of a mile in diameter within the shallower than 20 fathoms. Of course I was stupidly ignorant because 20 fathoms means that there was one place noted at 20 fathoms and it's somewhere within that circle of a quarter mile in diameter, but blissfully and on so many adventures this way, ignorance was a useful tool to me at the time because had I known how tiny that place was and the other places that we subsequently discovered and dived on and documented, I might have said this is going to be too difficult and not rewarding enough.

120 feet down and it's 20 feet across? Are you kidding? 20 miles out? So I benefited, we benefited from the requisite level

of ignorance in starting the project, so from that I picked up a few people who were interested, one in particular Don Dvorak became not only a lifelong participant in the project but a lifelong close, close personal friend and has remained so to this day. From that meeting there were enough people who heard about this project and it was interesting enough that word of mouth was enough to get people flooding me at home with phone calls. "I hear you're going to Cordell Bank. I'm a diver. I'd like to go with you. Which day are you going?"

I had to explain that this was going to be a project. It's not a sport dive. It's a scientific dive. We are not going there to see beautiful things. In fact the predictions, which I know to be wrong, but I wasn't sure how they would be wrong, the predictions were that it would be a pretty boring dive. It's too deep and too dark. In other words I was discouraging people who would call because I knew that most of them were enthusiastic sport divers and that's not what I needed. I needed a patiently prepared and willing to prepare extensively scientifically oriented diver.

Within a couple of months I had quite a list of people and so I contacted a staff member at the Geological Survey in Menlo Park, and he was kind enough to make available one of their meeting rooms in the Survey in Menlo Park, and so I called a meeting as of a certain date, and 40 people including myself showed up. So by that time I had elaborated and focused the plans and the potential problems for doing this. I had been sort of catching wording that I would use, "This is an expedition, this is not a sport dive" and so on, and I basically presented it. I also invited Paul Silva at Berkeley to come and talk about algae. He is one of the world's experts on algae especially on the California coast. He came and talked about what we might find in the way of algae.

A geologist came and talked about what the rocks might be and would we be able to bring back samples of the rocks and who would care. He pointed out that Cordell Bank is part of the Salinian block documenting with samples, Salinia would be useful to the geologists. We had a person who was a bird

mammal observer who talked about the birds and mammals that had been observed. There was a Marin County group that had been out to Cordell Bank and had seen whales and migrating birds.

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So I provided the scientific motivation through these other experts. They didn't have to take my word for it. At the end of that meeting I said, "Okay, let's take a break and talk about it" and then I called people back together and said, "Who wants to do this?" and everybody raised their hand, so I said, "We need a treasury. We need a funding here, so everybody write out a check for \$40.00" and everybody did. So we had \$40 times 40 or \$1,600.00, actually minus one person. One person decided he didn't want to do it so it was 39 times \$40, \$1,560.00 as a war chest. Foolishly I thought that was enough money and I think we projected to prepare for about two months and then we would do our dives. That meeting was in the summer and we would do our dives in late September, October, which by that time I knew was the right time of the year to do it.

We thought we could do it between July and September to prepare for the first dive at Cordell Bank, and that along with so many other things proved to be wrong. I can follow this on with the details of what took us more than a year to prepare for the first dive.

Livingston:

To follow up on a couple of things to make it clear, the 40 people that you're talking about expressing interest, were each one of them interested in the actual dive or is this in helping put together the expedition?

Schmieder:

These were all divers and I think by and large they were all sport divers, but I think they were motivated by the same thing I was motivated. They were sort of through their sport diving experience and looking for a project and that's why they came.

Livingston:

Could you name the Marin County group that you mentioned? Do you recall?

Schmieder: No. There was a small book written about Marin County birds and it was part of a larger group. The Audubon Society carries out their New Years Day counts and I talked with a physician whose name slipped my mind at this moment, but he gave me a copy of his book and told me that there had been birders going out from Bodega Bay to document the birds, so that's when I learned about Bodega Bay as being the port or portal to get to Cordell Bank.

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Livingston: Okay, and then stepping even farther back you said you codified it into a plan. Physically what did that plan look like? Was it a page or two of planning or how extensive was it?

Schmieder: Yeah. It was not what I came later to write much more extensive documents that look a lot like a business plan. They have background and means and budgets and so on, but it was probably as I recall five or six pages including the charts, where Cordell Bank is, what we expect to be there, and sort of what the project would be like. It was basically a handout description, summary of the project. It was sufficient at the time, subsequently in the other expeditions that I've done that are much more complicated such a small start would be way inadequate, and I've started those expeditions with 100-200 page plans.

Livingston: Could you go on then where we left off? Now you had the group. You had some money.

Schmieder: Well the next step was to actually see if we were able, capable of doing the dives at Cordell Bank. The very first step for me was making sure that I didn't have any people who thought they wanted to dive at Cordell Bank but were not up to it. Safety was then and has remained the number one controlling aspect of what we do and eventually, I'm very proud that we had a 100 percent perfect safety record. That started at the beginning.

The very first activity we did was we wanted to get used to twin 72 tanks with octopus regulators, which none of us had dived with before, so we talked Marine World Africa U.S.A., which was in Redwood City at the time, into letting us dive in their big

shark tank, and so we carried our new gear. There were a half-dozen of us including Don Dvorak and we also had an underwater communicator, a person who had engineered, developed, and had prototypes of essentially an underwater radio, and it was a radio. It operated with electromagnetic radiation under water, very low frequency so it would propagate at least a few hundred feet.

So we strapped our scuba gear on and these underwater radios and swam around in the tank while people gawked at us through the window and we talked to each other. We came away from that feeling that oh, we were very scientific, we had a lot of technology, we were really getting ready to go on an extraordinary expedition adventure. Following that we decided to start practice dives. It was part of the procedure that John and I and after John was not really involved, he actually didn't participate after the actual planning, John Hall.

We decided to go down to Monterey and carry out some practice dives, full gear, twin 72 tanks or bigger, octopus regulator and so on to get familiar with each other and to get familiar with the procedures, and so we did, and it was on those practice dives I was able to filter the people who had come to the meeting at the Geological Survey, the 40 of them. Some of them as I expected were really not up to that. They couldn't handle the big tanks. It was too big of a project. People started calling it a mega project because other projects that sport divers knew about had to do with maybe taking films of a certain nudibranchs or something like that, but this clearly was going to become a big task. As people realized that they decided that they weren't really ready for that and they just drifted away.

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Those that didn't drift away early on, many of them drifted away later off so that as time went on I had fewer and fewer people, so by the time we eventually got to a year later and could carry out the first dive I had only one person from that original group of 40 and that person was me. The attrition was so great. It was quite a lesson in how to start a project and how to take the next step, but by that time I had picked up two or three other people and I felt comfortable about their diving ability and my own ability. I

was a very strong and very skillful diver so I didn't doubt my own ability, and then the other people that I started interacting with and were very energetic and were expedition people in the sense that they would contribute to the planning and the preparation and brainstorming and all that stuff, so it became the project that I wanted it to be but not with the original 40.

Livingston: Was there an ideal number or a minimum number that you felt was needed to be able to carry it out?

Schmieder: There was a threshold that I would not go below to actually carry out a dive at Cordell Bank and that was five. The reason for that was that the absolute minimum dive team is two people, and I wanted to have two teams so that we could have one team and then another team plus one diver who would be fully suited up as an emergency diver but not be in the water so he would not be cold, he would not be burdened with the need to decompress and so on. He could get into the water and go rescue somebody who was drifting away in the current or something like that. Five was my number. I would not go to Cordell Bank without five or more.

As I approached the first dive I found I had four, and so I was very pessimistic. I had a boat by that time and I can explain how I got that, hired it, but luckily the night before we went to Cordell Bank and actually carried out the first dive, October 20, 1978, I picked up the fifth diver and he was clearly qualified so we went out and did it.

Livingston: Was there any regulatory entity that you had to deal with, obtaining permission for instance?

Schmieder: Apparently not. I don't remember being as energetic as I would be now to ask permission, but I guess I tacitly assumed that if there was some kind of regulation somebody would let me know, because by that time we had pretty much blown our cover. We were going to Cordell Bank and we had even had publicity about it, a newspaper article, which I can tell you about, before we ever dived. So I didn't run into anyone who said, "You need a permit" or "You need to talk to some official about it." It never

occurred to us that we would need such things. Nowadays things are different of course.

Livingston: You obviously were spending more than \$1,600.00 by this point.

Schmieder: *[Laughs]* Well the budget went down because we spent money on necessary things. I had to reserve some money for the boat that would take us out to Cordell Bank, but I found that we needed more money than that. Actually it's a little tough to remember exactly what it was we spent the money on. I think I felt it was right for us to buy film for the photographers' cameras. I had to buy tapes to do debriefing audio recordings. Those were legitimate expedition expenses and so we kind of dribbled away the budget. By the time we actually carried out the first dive there was no budget left.

Essentially I was supporting it just with my checkbook and getting on with it, but it wasn't too burdensome. By that time the number of people and the scope of it had narrowed considerably. We didn't have the big plans we talked about at that 40-person meeting in July of '77. We just wanted to get to Cordell Bank, dive, and get back, because I knew the threshold for the project was one success no matter how small, non-zero success. So we kind of just winged the budget for a while.

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Livingston: I take it that you bought your own gear. The members of the expedition bought their own gear. Things like that weren't being provided by –

Schmieder: That's correct. Everybody had to get their own twin 72 tanks and it was kind of tough. The tanks in those days were strapped together with some shaped metal bands. Those were hard to find. The regulators, an octopus regulator just means a second regulator and we required that in case somebody failed, that two people could breathe off of the same tanks. That hardware was already there so all we had to do was buy the gear, but it was everybody's personal expense including myself.

Livingston: If you could describe a little more of the planning dealing with safety.

Schmieder:

As I mentioned safety was number one on our to-do list in the sense that it was a requirement with me that we would do the sanity check. We were not doing this for adventure. People jump out of airplanes for adventure. This is not that. This was a project to go and collect information about a place, so it's an expedition. We joked that it would've been a lot easier if there hadn't been so much water around, we could just walk out there and collect things, but we spent a lot of our energy, a lot of time talking about how we could do this, reducing the risk of injury or death below a level where we could carry out an extended research program and feel reasonably confident that we would not have an incident, send somebody to the hospital or to his death.

So we divided that requirement sort of into two things. One was the equipment and one was the procedures. John Hall and I, John in particular had enunciated at the outset, which I talked about earlier, twin 72 tanks, octopus regulator and so on, and those became the standard inventory of required gear. The procedures were more tricky and we debated those more and in some cases I had to simply define it. I had to override people's adamant statements that "I do it this way." I would override it with something like, "You can do it that way, but we're going to do it this way on Cordell Bank."

Here are some of the examples of the procedures. We decided early on to have only one dive per person each day. You could not do a repetitive dive. That dive had to be designed according to the U.S. Navy tables, which provided decompression schedules, so depending on our bottom time and we could project that, we knew what it was going to be nominally to 150 feet, a bottom time of 15 minutes, which means from the time you leave the surface to the time you leave the bottom. The bottom time for that is 15 minutes and you pay for that with a three-minute decompression stop at 10 feet. All of this you read directly off of the U.S. Navy tables.

Remember there were no dive meters, dive computers at the time. In fact I dived with a man named Bob Hollis who invented

the very first dive computer and on the bottom at Cordell Bank he showed me the very first dive computer in the world, which was an astonishing surprise to me, but as we were planning this there were no dive computers and so here was a procedure that I defined and required. We would have a team of three people. One would be a collector of specimens, one would be a photographer of the collecting of the specimens, and one would be a safety diver who would have no other responsibility than to watch the first two.

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Team of three is normally a no-no for sport diving because of the danger of three people drifting apart. Two buddies keep track of each other, three is too complicated, but you see the motivation for having three, but then by defining one of those three as the safety diver, that's how I felt that we could assure that we could do a team of three and it would be much more efficient that way. We would get specimens, photographs, and get back alive.

The other parts of the plan involved requiring that decompression stop three minutes or more. You could spend as much time as you want hanging out at 10 feet, so that motivated us and we did produce some hardware. We called it a T-bar. That's common. You hang a pipe 10 feet long down in the water with a T on the end of it and so when the diver comes up he can hang on this. It's supported by an inflatable boat on the surface. He can hang on this bar and make himself negative buoyancy so he's hanging down. There he is at 10 feet. He can hang there as long as he wants while he does his decompression. When he comes back he comes to the surface and indicates he's to be recovered and if all goes well there's a diver suited up in the inflatable right there to take his camera or the specimen bag from him and then to assist him getting his tanks off in the boat and then get the diver into the boat, and that's exactly how we carried it out during almost all of the process.

You can see that for a group that had not operated like this before we had to define this, then we had to convince everybody that they were going to agree to do this, and then in the field what I found was essentially everybody did this. I didn't find people

violating the rules because by then we knew that the stakes were very high. The dangers were high enough that we all did it right.

Livingston: You had mentioned doing practice dives at Marine World. Did you do practice dives in the ocean as well?

Schmieder: Yeah. In fact we only did that one dive in the tank at Marine World and that was sort of easy and fun and getting involved with people. We did almost all of our practice dives at or near Monastery Beach on Monterey. The reason was there's a place there you can park along the road in the neighborhood, I know the neighbors didn't like it. Walk down to the beach, and within 100 feet you can be down 150 feet in depth, and it was relatively safe, there were always lots of people there so if there were an accident, rescue would be near.

There was a decompression chamber in Monterey, still is, so we had a lot of emergency response capability should something terrible go wrong. In fact nothing ever did go wrong except many of the divers who thought they wanted to dive 250 feet really didn't. If they came out saying, "Oh my god, that was terrible," then I didn't take them to Cordell Bank.

Livingston: Today we have detailed documentation of the underwater topography and in your early planning you mentioned that the map turned out to not be exactly what you needed. What was that map and was there any other information you could use?

Schmieder: There was only that chart and it was the standard public chart published by NOAA, has a standard number on it and there are charts of all of the U.S. waters. At the time that was the best and the only chart available to us. That was the chart that I saw when I made my personal discovery of Cordell Bank and the piece on that chart was this circle about a quarter of an inch in diameter with the mark 20 fathoms on it. I've said that this was a useful ignorance for us because we had no idea how misleading that chart really was.

It was published according to the procedures. Even now they would put the same kind of marks on the chart, but in those days

there were not the high-resolution survey data we have now with the control of meters. That's all we had and we thought we were aiming for a very big target. This was going to be Disneyland for us. We could wander around as divers. We worked under that assumption in developing our plans, the safety plans and so on, and it wasn't until deep in the preparation process that I started to realize what that really meant, and it was with some horror I must say that there was less understanding and there was now belief that 20 fathoms inside of a quarter-inch diameter circle did not mean there was a quarter mile of shallow water there. Who knows what it was?

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Of course as we subsequently know it turned out to be, shall we say, miniscule. It drove our planning and as we started to realize how to really interpret that chart, we had to become more serious about how to find such a place and how to establish a descent line to do our diving and it was quite different from the initial concept of just going out and plopping in the middle of this big place.

Livingston:

Was that something you had to do out on the boat or could you plan for that before you went?

Schmieder:

It was the latter. As I came to understand how to interpret the chart, what the chart really meant, I essentially changed how our preparations were going, and we started paying attention to how would we find this place, how would we establish a line on such a tiny place as far as to brainstorm and think about what would we do if we couldn't find the place, the place meaning not a huge place but now a tiny place. By the time we actually started going out to Cordell Bank we had that plan in place, and with practice, a year or so of practicing we got pretty good at it. By 2006 when I went with Jean-Michel Cousteau and his team on the dive for the sanctuary programs, I was able to establish the line probably within 15 feet of what I was aiming for, so we got pretty good at it.

Livingston:

Did you plan to do any specimen collection on the first dive? I know you mentioned the people interested in geology, etc. In this planning session how did you plan for collections?

Schmieder: If we had not planned and implemented a way to bring back specimens and/or photographs it would've been a sport dive. It would've been anecdotal science. We would've come back and said, "Wow, that was really gorgeous, wasn't it?" but it would've meant nothing. It would've not been an expedition. It would've been an outing. So collecting specimens was the critical action that we had to accomplish from the outset. Taking photos was also there, but I was really not an underwater photographer. I never got motivated about it. I formed friendships with underwater photographers who were very enthusiastic, but before we saw it for the very first time we didn't really know how photogenic it would be.

Now even in those days I didn't have any concept, any desire to go and take pretty photographs. That's not what we were doing. I didn't care whether they were pretty or not, so to me it wouldn't matter what the photos were, but to the team, especially the photographers, they were interested in subject matter. I was interested in content. These are slightly different. Well maybe I should say appearance. They wanted to come back with wonderful photographs. I wanted to come back with wonderful documents that showed details. This is the difference between a field practitioner using tools that he knows to get things that he wants, which is well-composed, beautiful photographs, and myself, which was to get data. I understand data. That's what my life is about is data.

So from the outset it would've been useless for us to go out there without collecting either or both photographs or specimens. As it happened on the very first dive we didn't have a camera, so we took no photographs, but we did get specimens.

01:10:00

Livingston: What kind of preparation did it take in order to collect the specimens?

Schmieder: Oh my gosh. What an adventure that was! We brainstormed on what kind of collecting apparatus we should develop. We figured that we were so smart we could invent something really

effective, really efficient, and therefore probably a little bit complicated, and we designed it and we actually built stuff. These had plastic bags and they had hinges and they had clips and clasps and tags and signs and invertible pockets and all kinds of stuff. We actually built a bunch of these things and went down to McAbee Beach and other places in Monterey and took these out into the water. By and large the things either disintegrated or tangled into a **Gordian mess**.

We came out saying, “Well, that thing doesn’t work. Let’s do something else.” We also got involved with a lot of other technology that we thought we could handle as we were planning this. One was these underwater communicators. So we spent some time with the inventor of these underwater radios doing distance tests and we could go 120 feet away and still hear them and so on because we thought that it would be really valuable for us at Cordell Bank to be able to talk to each other. We could say, “Gee whiz, look at that” or something technical of that nature.

Ultimately those proved to be unworkable because we had to trail a 20-foot antenna around in the water with us and we would get tangled up in that. Another piece of technology was a big time lapse camera, 16 mm built into three huge watertight steel containers with a gigantic A frame about the size of a child’s swing. We actually went out on a barge in Monterey and deployed this thing on the ground in the water at about 30 feet depth. It ran 24 hours taking one photograph every minute, so we came back with 16 mm footage that showed nudibranchs waltzing across the field of view and an octopus flashing in and out and algae waving around and it was really wonderful, but then I realized are we gonna carry this stuff to Cordell Bank and deploy this at 120, 150 foot depth?

The fellow who developed this was pretty much of a walking disaster by that time. He was brilliant, but he was clumsy in both his actions and his plans, and there came a point where I said, “Sorry. We can’t use this. We are not prepared to use this.” The same was true of those fancy collecting bags, so what we ultimately fell back on was the standard diver’s canvas goody

bag and a garden trowel and that's what we used forever, nothing more complicated than that.

Livingston: On this subject let's close it out by asking if there's anything you think could be addressed in this subject. We're just about to get to the first dive. Is there anything that we might be leaving out?

Schmieder: Would you like to know how I found the first boat that would take us out to Cordell Bank? 'Cause this was part of the planning. I went up to Bodega Bay after I learned about Bodega Bay. I found out that fishing boats went out to Bodega Bay on any days they had clients and weather permitting, and they would go out to Cordell Bank. They called it Cordell Banks. In fact even today most people call it Cordell Banks, which is colloquial. I consider it slang and I can't tell you how many people I have helped to understand that we say Cordell Bank, but I found several people up at Bodega Bay who said they'd take us out to the banks and sure they knew their way around and they'd take our divers and we were fine.

It was only one, Mike Craine who had a very tiny fishing boat called the *Mariner*, little black boat, and he went out once in a while outside. I think he had been to Cordell Bank once before, but he kind of cleverly and usefully hid that from me. So he and I stood on his boat in the harbor there in Bodega Bay and talked about the project and he agreed to do it and we agreed on price. I think it as \$275.00 to take us all the way out to Cordell Bank and back with my team of what I thought at the time was 15 divers or so, lunch included.

01:15:15

So as time went on, as our plans sort of lurched forward and downward, Mike Craine was the constant in that. The boat was available, and in fact when we finally succeeded almost a year later it was on *The Mariner* with Mike Craine at the wheel to take us on our very first dive. He and I went out on the boat six weeks earlier on a survey cruise to see if we could find that 20-fathom place, by which time I was alerted and understood that it may take some searching. So Mike and I and his wife went out just the three of us and we searched for many, many hours, a lot of frustration, couldn't find the 20-fathom mark, and I began to

think, “Oh my god, what hath I wrought?” His wife blew Mike’s cover by saying, “Dear, you were able to find it the other time you were here on the bank” and I kept quiet because I thought, wait a minute, he said he knew Cordell Bank like the back of his hand, been here many times.

It was okay. Eventually about 4:00 in the afternoon we found the 20-fathom mark and I threw out a small anchor with a thin piece of fishing line and a capped empty bleach bottle as a float thinking we found it. When we come back to dive we know exactly where to come, and I went back to my team and said, “It’s marked. We know exactly where to go,” not knowing how foolish, how stupid that was ultimately. When we talk about the first dive we made I’ll elaborate on why that was so silly, but that’s how I got to Cordell Bank the very first time and then eventually six weeks later with Mike on our first dive.

Livingston:

One more thing before we break. Did you know of any other expeditions in the United States on the coasts, even in the world, that you could compare notes with around the time you were doing it or in the not too distant past?

Schmieder:

No I didn’t, and that’s primarily because I didn’t look. First of all I was pretty busy figuring out our own project. Secondly I really didn’t need anybody else, although in retrospect that seems very arrogant. Nowadays I wouldn’t be nearly as arrogant to think that I could invent the whole thing myself. I knew of some projects and in fact there was a kelp forest monitoring program on the Channel Islands and I participated in that. I went down and dived with them and did the kind of volunteer work that I fancied we were going to do with Cordell Bank. The difference compared to that project was that project was a systematic long-term study and I knew at Cordell Bank this was going to be opportunistic. We would not have the ability to come back to the same place on anything like a schedule.

We may see many places only once, forever, so this was going to be an opportunistic grab-sample kind of expedition and because of that the control would not be take samples or at even intervals or at even times or controls like that, but it would be how much

diversity would we be able to go for. This is counter to the goal of many expeditions, maybe most, or projects that on the surface may seem similar like that kelp monitoring project. Cordell Bank was not going to be that way. It was going to be in a sense jump in, mixing verbs here, jump in, grab what you can grab and get out, sort of like that supermarket game. You run in and you've got five minutes to grab whatever you can grab and then you get out.

That's what we were going to do. I didn't need anybody's model, and in fact I found myself in conflict with professional scientists who advised me that I'm going about this the wrong way and that I need to lay out transect lines and take samples at even intervals and they simply didn't understand the difficulty of what we were about to do. I did, so that's how I went ahead and designed it without anybody's help, with my team of course.

[01:20:18, end of audio file 1. Begin audio file "CBNMS Schmieder 2" at 00:00:00]

Livingston: This is the beginning of the afternoon segment, interviewing Bob Schmieder. We're going to be talking about the first dive in October 1978.

First of all, could you name the people who were on that first dive?

Schmieder: Yes, I could name them. They were myself, there was Steve Lawler, there was Larry Pfoutz, there was Dannie Baxter, who is a woman....

Well, so as the project progressed – we had to go through the winter of 1977 and then the spring. And we started doing practice dives in preparation for actually going to Cordell Bank.

One of the practice dives we did was out to the Farallon Islands. And we took the assistant to Paul Silva who's the algologist at the herbarium in Berkeley. Dick Moe, Richard Moe, was just finishing, or had finished his PhD in algology. So he went with us on a practice dive out to the Farallones. And we dived to 150 feet, about a mile to the east of the southeast Farallon in a dive that I

probably would not do today because we had no knowledge of the Great White Shark population out there.

And this was in August or September just about the time when the sharks, as we now know, are returning to the island to feed on the elephant seal pups.

But in that dive not only did we carry out tests of the equipment and under field conditions, that is, not practice dives at Monterey anymore, but actually out in the ocean to the right depth with the right decompression schedule and so on. But we succeeded in collecting a bag of specimens and all the algae went with Dick Moe to Berkeley to the Herbarium.

And I subsequently learned that this was the first collection of subtitle algae ever done at the Farallones. So that gave us a jolt, a scientific inspirational motivational jolt that we not only could do field science, but we were doing it.

And that really spurred us on. And I got very much more energetic and enthusiastic and confident that we could do this. By that time the team had dwindled to Don Dvorak, who had started at the beginning, Steve Lawler who'd become a central team member and a shall we say strategist in this, Dannie Baxter, a woman from Marin County who was a sport diver and a photographer – underwater photographer, Larry Pfoutz who had been a friend of Don Dvorak, tall lanky, strong diver.

And so we had about four people at that point, but my minimum was five and so we went through for a month or so with not enough people, and I was feeling very impoverished, even despairing, that we may not actually go to Cordell Bank and go diving.

I think we only had four divers when we went to the Farallones, but to Cordell Bank my requirement was five.

So, I was searching for divers, but the time was running out because I needed to practice dives with them and make sure that

they understood what it was we were trying to do, safety demanded that.

So with some maybe unwarranted confidence I scheduled the boat, *The Mariner*, in Bodega Bay, and we planned to go out. And I said to the small group, "We're gonna go out there even if we can't go diving. If we have just four people we're gonna go out there and we're gonna look at the water because we're going to Cordell Bank. We have to do that. Otherwise, this project is dying from starvation."

So just the day before we were scheduled to go, which would have been October 19, 1978, one of the team members, I think it was Dannie Baxter, said, "I have a friend who's a good competent diver. I will vouch for him. His name is Don Griffin."

And I talked to Don on the phone and he gave me enough confidence that he would not only be a good strong diver, but he would be willing to play any role on this project that I wished him to do.

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And I said, "That's fine. I will establish you to be our safety diver. I will have two teams of two and you may or may not be able to go to the bottom, actually dive, but if you will function as the safety diver I will be grateful and I would be pleased and you can go out with us."

On that basis, with those five people, including myself, we went up to Bodega Bay and got on Mike Craine's boat, *The Mariner*, and we went out to Cordell Bank.

And we searched like we had done six weeks before when Mike's wife had indicated that he had been there once before. We searched here and we searched there. Our navigation consisted of a LORAN-A receiver. That preceded LORAN-C.

LORAN-C could locate you within a few hundred yards or so, or at least could return you to the same kind of a point. LORAN-A was an old radio receiver that you turned a dial on to make a little

squiggly signal showing on a display tube about 2 inches in diameter.

You turned the knob until that display sort of intersects itself. Then you read on the dial, then you consult some numbers on a table and that tells you where you are within plus and minus one mile.

But on that day the second channel – to locate yourself you need two coordinates, latitude and longitude – so on that day one of the channels was not working. So we knew where we were on Cordell Bank within plus and minus one mile north and south and plus and minus infinity east and west.

So we spent many hours that day surveying – that’s a nice technical term – we were wandering about hoping to find Cordell Bank. And we kept saying to ourselves, “Holy cow, this place is huge, it’s four miles wide and nine miles long.” We can’t even find Cordell Bank much less find this quarter mile diameter that we thought divable area where it says 20 fathoms. We couldn’t find anything. It was all way too deep for us to dive.

And we were even speculating about having to go back. And so I was saying, “Well, at least we got here. We think we’re on Cordell Bank,” and so on. And then I remembered how Edward Cordell had found Cordell Bank. He looked around and he saw a whole bunch of seabirds over on the water *over there*, and he went *over there*. And after hours of frustrating unproductive searching right where the birds were was where the shallow water was.

So I said, “Mike, look there are a bunch of birds over there. Why don’t we go over there and look?” And sure enough that’s – bingo, we got 20 fathoms, pulled up that 20 fathom mark just like that.

So when we got that we scrambled and dropped the descent line, not as precisely as we later learned to do it, but we dropped it somewhere in the vicinity of that 20 fathom mark, and from that point on we knew we were able or probably going to be able to carry out what would be the very first dive on Cordell Bank.

Livingston: Now, this is jumping back just a little bit, but how did you feel as you approached that day of the first dive that had been scheduled? What was going on inside the day or two before?

Schmieder: The day before, until I got the fifth diver, Don Griffin, was very disheartening to me, very frustrating. I kept repeating my own mantra to myself, "We never give up."

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And yet there I was so close to feeling like this turned out to be too hard to do. And then I would say, "Am I gonna explain to all these people that I gave up after all this?"

And then we found Don and I had the fifth diver. So I had enough breaths of air there to get me through 18 hours. It was a very tentative time. I was very worried that we didn't have, you know, that we would be frustrated. That is, we would be unsuccessful because of another factor.

There would be – a car would break down, or we would – Mike Craine would be sick. We would forget to bring our dive gear. Somebody wouldn't show up. You know, some reason that would frustrate us.

After all, over that year, especially toward the summer and fall, we had scheduled boat trips out to Cordell Bank eighteen times and probably half of those times we came up to Bodega Bay and loaded all of our dive gear, our twin tanks and our wetsuits and everything in order to go out to Cordell Bank, only to either decide not to even leave the harbor, or we would go out, go around the corner, it would be rolling big waves and we would turn around and come back, eighteen times.

Livingston: So those eighteen times though you had planned to dive those days?

Schmieder: Eighteen times we thought we were going to be going diving. But we didn't succeed on any of those. And so on this particular time that you're asking about, when it looked like yet again we were on the verge it was yet again a time to go up to Bodega Bay and load the boat, without really knowing whether we were going to

succeed in getting out of the harbor, much less going out to Cordell Bank, even less than that, succeed in diving.

But I knew at that time, that this was opportunistic. If we weren't there, if we said, "Well, on the average we can't do this." Then we would never do it.

It had to be the exception that would allow us to do it. And that's how it happened in the end.

Livingston: Describe the weather and sea conditions that day.

Schmieder: In retrospect it turns out to be rather typical. We were inexperienced at the time, so we couldn't really – this is partially why it cost us so many unsuccessful attempts. You go out of the harbor and there seems to be a fair amount of surface energy, you know, waves and things, sometimes big rollers right out of Bodega Bay.

If you're faint of heart you turn around and you say, "It's gonna be too rough." But what we learned eventually, and what happened on that particular day, October 22nd. We went out through that rough water and then it became clear and calm.

And from about 5 miles out all the way to Cordell Bank and all day long it was as flat calm as we ever saw it subsequently. It was one of these ripples-on-the-water day.

So we were blessed with that. It was a good time to have no problems. You know, I codified that into Bob's Law About Miracles of, "When you need a miracle, there's one available." There was one that day.

And now that I think about it I want to make sure that in the record it's correct that our first dive was October 22, not 20th. I often confuse that because it was George Davidson who discovered Cordell Bank on October 20, 1854. We were on October 22.

Livingston: How about the atmospheric conditions that day?

Schmieder: Totally calm and beautiful. I don't remember any clouds. I don't think there were any clouds. There were a lot of birds. There was not enough waves on the water to remark about. There were not even little wavelets. It was enough to see ripples expand from the birds bobbing on the surface.

Livingston: A little bit on the onshore preparation whether it be the day before or the day you drive with all your equipment to the boat. What did that entail, loading up the boat? What did you have to be sure to bring?

Schmieder: Nothing remarkable. You know, every diver does this; he gets his dive gear together. And so he has a dive bag. I had a dive bag at the time, and you put your wet suit in it, your weight belt you put around your waist and load it in the car.

That's basically it. The photographers have to keep track of their cameras. I did bring goodie bags and tablets and clipboards for writing notes and camera for top side pictures and so on. But it was unremarkable, except for the fact that we had twin 72 cubic foot tanks or bigger and I used twin 80 foot aluminums, and these were big and heavy. And so it meant carrying a lot of gear.

Livingston: Now you found conditions right out there. What about that marker you had left before?

Schmieder: *[Laughs]* We were so naïve. Perhaps that marker lasted a day. Cordell Bank is not exactly on the main shipping channel, but it's not so far and we have been diving, we had diving operations underway when a great big container ship goes smack across the top of Cordell Bank.

And on occasions like that we would panic and we would get on the radio and we would fly flags and all try and get their attention because the nightmare would be that this ship would just run over us and kill us all which happens now and then out there. We all remember the *Jack Jr.*, a fishing ship, that was killed by an anonymous vessel.

So knowing that now, the idea of leaving a marker out there, especially such a flimsy one as I put out there, is beyond silly and almost the kind of thing you don't want to confess.

But here I've confessed it. So, of course, that marker was not there, long since swept away either by vessels or just by the sea itself.

Livingston: You did look for it as you were heading out?

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Schmieder: Oh, we looked for it and looked for it and looked for it and wondered why it is it's not there. But, of course, now we would be a lot more calm about that whole thing.

Livingston: Now, you're ready to dive and you dive. Could you tell the overall story, maybe blow by blow, you're ready to dive and this first dive? Who went down, things like that.

Schmieder: Yeah, well, and a good part of this I've never told because these are some details that I usually don't have the time to tell these details.

After probably three hours this got to be maybe 2:00 or 3:00 in the afternoon, it was more than three hours of searching for the shallow place, maybe it was 2:30 or so. And we finally hit the shallow 20 fathom mark on the sounder, threw the line in with a buoy.

We didn't have what we subsequently required, which was a live inflatable boat on the descent line with a safety diver suited up in that boat. So Don [Griffin] did suit up and – to play his role, which he did, as the safety diver, but he stayed on board.

So as soon as we got the line down we decided – okay, I said, “Stop, let's assess the conditions, let's look at the current, see if we can actually go diving.” Just then the fog rolled in and it was zero visibility. Where that fog came from, I haven't the slightest idea. But we were in soup. We didn't have visibility the length of the boat, which was probably 38 feet.

And I wasn't gonna dive in zero surface visibility. What if a diver floated away? And there was a good chance of that. We didn't know what the currents were like. What if a diver came up not on the line, away from the boat? He couldn't be heard and he couldn't be seen. So it's absolutely not diving, period.

So we waited, and pretty soon the fog became patchy. I think we waited a half an hour or so. It became patchy and then I had to make a decision, is it clearing enough so that we can prepare to dive?

And it seemed to be, so I decided, "Okay, let's get suited up and be ready if the conditions are good enough." So Larry Pfoutz and I got suited up. I decided I would make the first dive.

This was the same decision that Neil Armstrong made when he and Buzz Aldrin had to discuss who would step on the moon first. And Neil Armstrong said, "Well, I will, of course." So I said, "I will make the first dive, of course."

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So it took us half an hour or so to suit up, and the conditions were fine. We seemed to sense that there was not an awful lot of current, at least on the surface. So it seemed safe to do it.

And so when we were ready I had the boat circle around and Larry and I fell over backwards into the water on Cordell Bank, and then went down.

Livingston:

And describe going down.

Schmieder:

First of all, when I went into the water I had an instant rush of realization, "I am in scuba gear getting ready to go down on Cordell Bank." And I think you can appreciate after a year – more than a year, of preparation, talking strategy and so on, the act of actual doing this was what people must feel when – when the astronauts get into a rocket and this thing finally takes off after years, maybe a decade, of preparation.

And I had that rush as I went into the water, and as I sort of got oriented and got to the line. I said, "Holy cow, this is actually going to happen here."

There was not so much current on the surface, everything seemed favorable and I was just very cognizant that, "This moment is happening now," whatever that means.

So I started down the line with Larry. And I think we sort of took turns going down the line. I was ahead, he was ahead. And surprisingly soon I started seeing what I assumed was the bottom. It was sort of this greenish gray opaque cover below me.

And I thought, "How cow, we've done all this and we are at the bottom and it's only 60 feet down and it's mud. And that's all there is. Darn it," or some thought words like that.

So we continued down and as I went down, this gray green blanket started getting texture and a mottled appearance, and then I realized it was shimmering. And then, only then, did I realize I was looking at fish. Somehow I had not been prepared. I had not thought about seeing rockfish. I was used to thinking there are gonna be rockfish, like, lingcod on the bottom.

But I had not actually seen in my previous diving a solid opaque blanket of rockfish. And so I was unprepared to even recognize it. It didn't occur to me these were fish until we got close enough to see here they are shimmering.

And as I approached them I probably was only six feet away or so, maybe even less than that, they started slowly parting, as fish do. They moved very gently and slowly, but of course, you can't come close to them, they know how to keep their distance.

And if you can imagine having an opaque curtain in front of you and then a small hole opens and it widens like an iris, and as that iris opened I saw below me this extraordinarily colorful, exquisitely beautiful, astonishingly bright landscape below me with these colors pink, especially, white, especially, but maybe some other purplish colors.

It was not gray. It was not maybe the fluorescent plastic colors that you see on, you know, traffic markers. It wasn't that bright. But the combination of seeing colors of any kind, and also my mental state, and also probably starting to get a little bit of nitrogen narcosis, which enhances your perception, to me at that time was an astonishing, overwhelming visual experience.

And I had another moment of realization. At that moment, just when I saw that, it was – the moment was, “Holy smokes, I am here, I’ve seen it. No matter what else I do in my life. I have seen Cordell Bank and I’m the first human to do so.” That’s what I thought about.

00:24:58

And then I had to stop and I just hovered looking at this, looking down at it maybe 30 feet below me, 40 feet. It couldn't have been much more than that. I just hovered there for a while and looked around and looked at sort of the geometry, the pattern of the colors.

I tried to sort of not look at details. I wanted to see sort of the pattern and I was looking around to see this quarter mile wide so called big flat area where we could wander around, which I knew by that time probably was not there.

All I could see was this very narrow ridge below me, and it trailed off into invisible dark depths off to the edges. My peripheral vision at the limit of visibility it was probably 80 feet or 90 feet or so. And it would go out of focus at the limit of that visibility, but everything inside of that was like a jigsaw puzzle of colored pieces.

And that’s when I knew that I had been to the proverbial symbolic mountaintop. This had to be the same experience that Hillary had when he stood on the top of Everest, knowing at that moment you have just done it. And anything after this can never change the fact that you’ve done it. We succeeded, we are here.

It was an exhilarating feeling. So Larry and I slowly drifted toward the bottom and we got to the bottom and I just sort of sat down on the bottom, kneeled on my knees on the bottom. And I

turned to Larry and I moved my hands in and out with this gesture, you know, moving the hands, flexing your elbows back and forth like this. And he did it back to me. This was a statement like, “Do you believe this? Is this incredible or what?” sort of a feeling.

I didn’t take an awful lot of time once I got to the bottom to look around, because I immediately became aware that I had very limited time. I forgot that for a moment. I was into this sort of Wonderland, this visual experience.

I wasn’t narced so bad. I was clearly conscious, I was clearly lucid. It wasn’t that. But I was so overwhelmed with how significant it was. We had worked so long and so hard, and then how rewarding this has turned out to be.

It is not what the biologists had said it would be, dark and cold and deep and uninteresting. It was light and it was colorful and it was fabulously interesting. It was incredibly interesting.

So once that passed, that immediately emotional response, I became aware that I’d better come back with some results or I would be a goat.

So I got my goody bag and trowel and I went around ripping the place up. Of course, you can’t do much damage. I didn’t feel one bit guilty. And I went around cutting things off and picking things up and putting them in the bag. And I pretty much, maybe half full – a fairly large bag, big chunks of hydrocoral with sponges entwined in it. And all the commensals and obligate commensals that came therewith.

I was not aware of those at that time, but I was aware of collecting big chunks of things, which I did very vigorously. I don’t know really what Larry did during that time. I think he circulated around and watched me. He did not have a camera, so we got no photographs from that dive.

And his role basically was safety diver for me, watch me, am I okay or am I in trouble and he was a very strong diver, very responsible, and I felt very secure having him there.

So I went about my business and collected the bag of specimens, watched my bottom timer and when it became time I sort of flattened out and looked downward as I allowed myself to float up. And I watched Cordell Bank sink slowly deeper and deeper, get smaller and smaller features, fewer features until it was hard to distinguish the details that I had just seen.

And I was very aware – I tried very hard to fix that image in my mind. I needed to remember every frame. I wish I had been a movie camera that I could capture every frame. That's what I was trying to do as I slowly backed out of there.

00:30:12

And then suddenly the whole place went blank because I had passed through the level of fish, and all I was looking at was this shimmering carpet blanket of fish. And I floated away from them and they too went off into the darkness and the dive was over.

Livingston:

Getting back up into the boat what were you feeling and thinking?

Schmieder:

Once you've done a dive like this, the physiological feeling is one of extreme power and vigor and strength. And the reason is you have a lot of nitrogen in your body and oxygen. And so you come out with a lot of exhilaration from deep dives like this.

So I broke the surface, the boat was right there for us, and Don acting as the safety diver was there to take my bag of specimens. And I don't remember what I – yes, I do remember what I said. I said, "You're going to like this." Those were the first words I said, I think. "You're going to like this."

They hauled us out. I don't actually remember the mechanics of getting back into the boat. But there we were and I think I repeated, I said, "You're going to like this. You're just gonna love it."

And I showed them the bag of specimens. We didn't really open it up. I reached in and took out a chunk of hydrocoral and I said, "Look, we got it. We did it," or something to that effect.

And we spent perhaps 10 minutes gloating and gleeing and feeling triumphant. And then I had to decide were we going to put the other team in the water or not. You know, should we go home at this point? Because it would be a risk to put in another dive team. This was not an easy dive, although relative to some of the dives we did, this was a very easy one.

So we watched the conditions. The fog was of great concern. The fog had come and gone. While we were on the bottom the fog had come and gone. They had stuck right close to the descent line.

So as the conditions improved again I decided, "Okay, we'll do the second team in." And I said, "Why don't all three of you go? We are suited up; we will act as your safety divers. All three of you go." Which means Don Griffin, Steve Lawler and Dannie Baxter.

And so they did. And they went in and I waited very anxiously on the surface for them to get back. It was a nominal dive, 15 minute bottom time, and they popped to the surface and had some specimens and I was so triumphant in my feeling.

So we got them back on board. And I have a small story to tell about when they got back on board. Once they were back on board I knew that we had not only done what we said we would do, but we would come back over and over again. I knew that I would be coming back for 10 years exploring and describing this place because one thing that I had not known the previous day, and that was, "Could we do this?" And the answer was now, "Yes, we can do this." So we did.

Would you like me to tell you this little story about the second dive team then? I had given very clear instructions all along that we're not going to collect artifacts. Like, "If you find any fishing gear, and you probably will, we're not gonna collect that stuff," boat anchors, cans, bait boxes, you know? "If it's gold bullion, yes, maybe, but we're not gonna collect artifacts. Please do not waste your time doing that. We are here to get biological specimens."

Ironically, Don Griffin, the fifth diver who joined just the day before had not heard this from me and I somehow failed to convey that to him.

So when Don broke the surface he had in his hand, he said, "Here, can you take this?" And it was an anchor; it was a small, heavy boat anchor. And so we brought it up and we pulled it on board.

00:35:00

And then we got the team out of the water, all three of them, and they got all back on board. "Are you okay?" "Yes, I'm okay, everybody's fine." So we're standing around talking about this and I looked at that anchor and I said – and we have this on tape actually, on audio tape, "You're not gonna believe this," I said. And I'm reproducing this verbatim, "That's the anchor I threw out here with a marker line six weeks ago."

And what had happened was when we had our survey crew six weeks earlier and I threw out that flimsy little marker I used the only anchor that I had with me, a little boat anchor, I think it was actually Mike's, threw it – no, I brought it to set out the marker.

Threw it out on this – where we found roughly 20 fathoms, just some place, and we had no knowledge at that time how extensive that place was.

Then when we went back on this first day of diving, I had not told Don to not pick up any anchors, and by the most miraculous coincidence we had dropped our descent line anchor for that dive about 20 feet – 120 feet down, 20 feet away. And not only that but Don, when he saw that, decided to collect it even though I thought that he had known to not collect any artifacts like that.

So I kept that anchor for many, many years and eventually it disintegrated. It was a souvenir for many years. And it was this miraculous – the good luck anchor. We actually brought it out with us on subsequent expeditions as a good luck charm. Not that anybody believed that, but that's what we did.

Livingston:

Fantastic, that's fantastic. A couple of technical items about the descent line, for instance. How did you set it and was it marked as

you went down? What was your relationship to it when it was set and you went down?

Schmieder:

Yeah, on that first dive, and it took us a while to figure out that the topography of the bottom is extremely rough, that the pinnacles and ridges are extremely small. So it's almost impossible to put a vessel on top of it and say, "Okay, it's 20 fathoms right here, drop the anchor right here," and have that anchor fall onto the pinnacle.

It normally drifts off somewhere else, the current takes it 100 feet away and it misses completely. And we had plenty of experiences like that where we went down, in fact, the next year 1979, we only did one dive that year. The team of three went down and they found the line – the anchor hanging loose at about 15 feet above the bottom at 205 feet because it had missed the target.

On that particular day, on the first dive, we learned that the ridge, the pinnacle is so tiny that you can't just approximately drop an anchor on it, you will miss it. And this coincidence with the previous anchor is not such a great coincidence because there was no other place 20 fathoms deep anywhere nearby for a mile or two away.

So having succeeded in dropping the anchor on that place, it's not surprising that the first anchor was right there because that's the only shallow place.

Then recognizing from seeing it on that dive, recognizing that these are tiny pinnacles or ridges, and very often they are ridges, so they are kind of long, but they're extremely narrow. What we figured out was if we would first find the coordinates, find the location, record the coordinates on the LORAN, then we would steam the boat up current, transversely across the ridge, drift backward and at the best guess location drop the anchor, it would drift down and hook on the up current side of the ridge, the line would go right up the ridge and across the top.

Now that's a pretty tricky operation, but we made it work. We learned how to do it. So well, as I recalled earlier, when Cousteau and his group and I went out there I set the anchor for them and I

dropped it probably 10 feet from where I – I was very familiar with that particular ridge and I was able to drop it 10 feet from where I wanted to put it.

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So it's a skill and it's one of the reasons why we were successful in diving there repeatedly. Whereas if somebody went out fresh, like Cousteau had never been there, wouldn't know how to do this. That was the technique that we evolved for hooking onto those tiny ridges, and it worked very well.

We could do it about half the time perfectly about a quarter of the time imperfectly and about a quarter of the time failed totally.

Livingston:

Now, the descent line, is it marked? And when you're going down and back up, are you attached to it or –

Schmieder:

Yeah, we had a rule, it was one of our safety rules that you could never go out of sight of the line. Some of the divers would carry a transect line which they would hook on to the anchor, or onto the line somewhere on the bottom, and stretch it out behind them. But the rule was you could never, ever go out of sight of your return line.

In addition, we attached flashing strobes at 10 foot intervals up from the bottom. We attached those before we would put the line down, or in some cases actually the – when the conditions were good and the divers were good they would attach – the first team would attach the strobes on their way down for the other teams.

And it was typically Bill Kruse and Tom Santilena, specifically, who were the strongest divers and they would do that. So on the bottom, why would we need the strobes? It is sort of dark, surprising large amount of ambient light but also when you become narced you can't see things as clearly.

And I have an incident that I could recount for you that involved me. But the strobes were there to be beacons to bring us back, and they actually functioned that way. We were saved – stabilized and saved, by having those flashing strobes at 10 feet for about five or six of those strobes.

Livingston: Did the second team for that first day take any photos?

Schmieder: No, we didn't have a camera. Ironically Don Griffin had a camera and he was an underwater photographer, he would have loved to. But somehow the word – he was the last person to join the previous day and I guess somehow we had not told him.

One of the other team members, Dannie Baxter had interacted with him and I guess just had not told him to bring his camera. So there we were without a camera.

Livingston: Now, there you are out there. Did you – other than the dangers of diving that you were well familiar and prepared about, did you think about ships coming through while you were down? Sharks? Things like that? Was there any sense that there was anybody else out there or any dangers?

Schmieder: The team talked a lot about sharks. I didn't get caught up, and I tried to damp off all that talk, not only because it was not productive, but it was a binary decision that everybody had to make. If you don't want to go in the water where there may be sharks, you should not go in the water.

And quite a number of people did not. They didn't stay with the project. Out of the original 40 some of them dropped out telling me, "Well, it's pretty sharky out there. I really don't want to do this."

I took the position that I had talked to the fishermen who go out there and they saw a bunch of blue sharks. They saw blue sharks regularly, but never any Great Whites, never, ever any reports of any Great Whites. And those are the only ones we were worried about.

And the reason for this is that they find their food at the southeast Farallon, that's where the elephant seals haul out and there's nothing for them at Cordell Bank.

So we just didn't talk about sharks much. And eventually we did have an encounter or two. There was an El Niño in 1983, the water was warmer and I was hanging on the decompression line and a very large mako shark came zooming. And they are frightening, those fish. They swim so fast, and they appear out of nothingness because your visibility has no transition. It just goes off into fuzzy nothingness.

And suddenly there's a shark coming at you at high speed and then he gets up two feet from you and veers off. It was a bit unnerving. Other than that, we didn't – over the whole time we were there we never saw any Great White sharks on Cordell Bank.

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And on the first dive I don't think it ever entered anybody's mind. We were so focused on the fog which might – first of all, finding the place, secondly, the fog that might frustrate the diving, third, the mechanics of the diving, just carrying it out, and then fourth, just the exhilaration at having succeeded.

So I don't think the word "shark" was ever mentioned the first day. It just wasn't in our consciousness.

Livingston:

Now the divers are back up, this first dive. I assume you head back to Bodega Bay. What was the conversation and the feeling on the boat as you all were heading back?

Schmieder:

You know, I don't remember that as clearly as I remember some of the events that I've just told you about. What I know habitually we did coming back is we would sit on the stern of the boat and we would kind of stare off at infinity and we would congratulate ourselves for being so good at what we were doing.

And we would talk about future plans, "Well, let's do this every weekend." And, "What are you gonna do with the specimen?" We would bring with us manuals, the keying guides for keying out specimens.

Generally, and I believe on that particular day, I would busy myself with sorting the specimens because I was very aware at how quickly they had to be fixed and protected, preserved.

So what I did as we were coming back on that day and on all other successful dive days is, I emptied the goody bag out on some sort of a surface and we brought with us a whole bunch of jars and formalin and alcohol. And so we went around picking the specimens apart and putting them into appropriate sized jars, adding alcohol for the invertebrates and formalin for the algae, and writing out labels.

Because I had prepared little paper labels on non-disintegrating paper, you write on it with pencil, because the ink washes away. And so by the time we got back to Bodega Bay that entire collection was sorted and labeled in jars. And from that I could then – and I did pass it around to a variety of specialists in various institutions, including the Academy, for whatever they wanted to do with them.

But that was our currency. We essentially had sort of like gone to the moon and collected some rocks and now there's somebody who wants to see those rocks. It wasn't quite as big but we felt at the time that it was almost as important.

Livingston: Speaking of rocks, did you bring up a rock?

Schmieder: Not on the first dive, that's for sure. I totally underestimated how hard that rock is. Cordell Bank is made of a granite, or a granodiorite. Those are different just because different amounts of minerals, orthoclase, plagioclase, quartz and biotite mica.

What I underestimated was the hardness of this stuff. Well, it's not as if I've never seen granite before. Somehow I had this image I was gonna take my trowel and chip off a nice chunk of rock and pass it to the geologist.

Well, that was sort of like chipping something off of a marble building that you might see with a – are you kidding? This was incredibly hard. So we got no rocks.

And it wasn't until two years later that the Sacto [Sacramento] team, the real strong divers, assembled a pneumatically driven

jackhammer, and all jackhammers are driven pneumatically. They made an underwater jackhammer which they fired with a third scuba tank that one of the guys wore, and they used a jackhammer to chip off a few very small chips of a vulnerable place. And that's all we could get. That's all we ever got because that rock is so hard.

Now, if you're the U.S. Navy or, you know, some big corporation and have resources you can certainly do things differently. But we had no resources to speak of.

Livingston:

Did you or your friends on board have any experience to compare it with or even physically the place you saw there on the Cordell Bank, did it remind you of other places you had dived or was it unique?

00:50:27

Schmieder:

It was unique. I had never seen anyplace like that, but again, I had only dived up and down the California coast, not to the Red Sea and so on. But I was sufficiently well prepared, and I tried to quantify in my view, I tried to sort of quantify what I was looking at, I tried to fix it as images and try to look at it, not just gaze at it, but look at it.

And I did as well as I think could be expected. It was not like any place I had seen before which doesn't make it, you know, superior in any sense. Because every place in the world is unique and intrinsically just as valuable as any other place.

But it clearly was qualitatively different from places I had seen say at Monterey where you're close to shore and up the coast to Salt Point and so on. This was a different kind of community, and that's one of the reasons I knew that I would come back year after year if I could and explore it.

Because clearly this was counter to what had been predicted by a number of professional marine biologists, different from anything I had seen in some years of sport diving. Just obviously, visually different and therefore worthy of exploring and describing.

Livingston: I want to clarify about the crew. There were the five divers, there was the skipper. Anybody else on board?

Schmieder: There was my wife at the time, she was on board and took pictures. So we have surface pictures. And there was one other person, I think it might have been the skipper's wife, again. I'm a little vague on that. I'd have to check the record. I think she was on board as she was when we surveyed six weeks before.

Livingston: This was Craine who you had gone out with before.

Schmieder: Mike Craine.

Livingston: Mike Craine.

Schmieder: He had the boat, *The Mariner*, in Bodega Bay. I think he subsequently moved into Santa Rosa.

Livingston: Now, you returned to shore and packed up your car, I assume, and headed home.

Schmieder: Went home, yeah. Not too fancy, just went home.

Livingston: So what did you tell people in the days following? And also address the media and what the feeling was as you went back out into the world after this experience.

Schmieder: There were several people I keyed in on that I wanted to know – I wanted to hear, I wanted to tell them right away, and I was very keen on the following. First I called my dear mother and father and said, "I've done it." "Wonderful, we're so happy for you." That sort of family connection. That was number one.

Number two was, I called and I believe I left a message for Skip Garretson at the *Oakland Tribune*, that we had finally succeeded in diving on Cordell Bank and we had specimens. And I don't remember exactly when I got back in contact with him and filled him in. But I gave him an interview, I think in the next week or so, a long talk over the phone and he wrote an article and they made a sketch.

In fact, the sketch that appeared in the paper is in the book, I believe. It's – here, it's on page 29. This sketch of an underwater scene was made by Frank Pinnock, an artist who worked for the *Tribune* at the time. And he made that sketch from my verbal description over the telephone. And when I saw the sketch I gasped and I said, "That's exactly what it was. It was exactly that." His sketch was so appropriate, captured it so well.

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I had two other people I wanted to contact right away, and one was disappointing. It was John Hall whom I had done the first strategy with, and I didn't reach him, and never did again. Never – and I have no idea if John ever knew that we had succeeded in diving on Cordell Bank.

And the other person that was very keen on telling was Don Dvorak. And the reason is Don had started with us on the project and he had been to every meeting and every strategy session and talking a lot.

He and I became close friends. And it was so frustrating out of eighteen times trying to load up the boat to go to Cordell Bank finally he had an opportunity in late October, the third week of October to go to the Grand Canyon, and he went. And it was that weekend we succeeded with our dive. And I had to call Don sort of like the General calling the Sargeant's wife to tell Don, "Don, I have good news and bad news. The good news is we dived on Cordell Bank, and you know what the bad news is."

And he said, "Well, I'm sorry to have missed it." The irony is that he stuck with the project, worked again for a year, then next year, 1979, we made only one single dive and Don was on board, but he was not the diver. And after that first dive I had to abort the rest of it, the conditions were wrong. So it wasn't until the third year that Don succeeded in diving on Cordell Bank.

Livingston:

Now, you've had your first dive and you've described that quite well. So what did that first dive inspire in you in the following days or weeks? Did your goals or plans change after that from what you'd learned?

Schmieder:

Well, as you can easily imagine, we were almost to the point of giddy with our pleasure at ourselves. You know, we were so happy and so proud. So we decided to have a public meeting. And we had connections at the Cal Academy and they made available one of their meeting rooms.

So we decided, I think it was in November, to have a public meeting and display what we had done. And so word of mouth got around and we had slides, not underwater pictures, but other pictures, and we put together a bit of a program which included introducing various people who had been important in participating in this.

Ironically as we were assembling in that meeting room for this public meeting the San Francisco Microscopical Society was meeting in the small room adjacent. And when they – somebody came in and said, “What are you doing here?” And we said, “We just came back from an expedition to Cordell Bank and we have –”

They said, “Well, may we join you?” So they adjourned their meeting to join our meeting and our ranks swelled. So we had maybe 50 people at this meeting.

And so we described what we had done and it was trivially easy for me to project into the future. So I said, “We want to go back to Cordell Bank and we know where to go, we know how to do it now.” I showed a lot of confidence, some of which was not yet earned. “And we’re looking for anybody who wants to perhaps participate in any way you like.”

So the San Francisco Microscopical Society offered to look at any diatoms we might collect, and I handed them a jar of diatoms, or stuff, gunk, grunge, we called it. But the really important thing that happened was that there were several people there who had been friends before and had participated in diving projects before, in particular an underwater cave diving project.

Now, cave diving is serious stuff. I wouldn’t do that. That’s for really good people. But here were three people, Bill Kruse, Tom

Santilena and Paul Hara, and they had carried out this project up in the Sierra and had dived on an underground river and lake and had collected cave adapted specimens, several of which had been subsequently identified as new species and described in the literature and named for one or more of these people.

01:00:19

They came to me after the meeting and said, “We’d like to join you. We’d like to participate in this if you would like us to.” And they explained who they were and what they had done. And I recognized instantly these are the kind of people I had dreamed about finding, project people, extremely competent divers.

I said, “As of this moment you’re part of this project.” So Bill, Tom and Paul became lifelong very close friends, and at the same time, actually at that same meeting, was another man, Harry Sherman, who was not part of that cave diving group, but Harry Sherman, Bill Kruse, Tom Santilena, Paul Hara showed up or appeared at, I met them, at that public meeting after our first dive, first expedition, and they together with Don Dvorak and myself became the core team that essentially carried out and led and then trained so many others to go out there and do the rest of the project over the next six or seven years.

Livingston:

Bob, could you talk about the next dive in 1979? Tell us that story.

Schmieder:

After our success in 1978, and we were so optimistic and we had this public meeting, suddenly the team swelled in size. I suddenly had what I considered for the first time a competent team both in terms of scientific orientation and diving capability, technical diving capability, as well as team members who were really into the project as a project, not just going along for some other reason.

With that optimism we planned to go back and in 1979 to carry out a much more extensive series of dives, get the first photographs, for instance. We had seen it, now we needed to really document it, and that’s what we had in our minds, our plans.

And we planned accordingly, and by that time we’d learned a little bit about the weather and the sea states. So it didn’t take us eighteen times to get back out there.

So when we did we got out there and the conditions were acceptable. They weren't as good as the previous year, they were acceptable. What went wrong was we couldn't find a shallow point. And the reason was we decided to go not to the same location that we had dived in 1977, but to start exploring other areas of the bank.

We thought, "Well, this is fairly easy." And in the meantime we had done some surveying, which means we had just driven the boat back and forth recording our positions as we went, and recording the depths on those positions.

So we were doing surveying at a very low rate, but we started discovering other points that were 20 fathoms or less, and we were amazed. They were not on the chart. There was no hint. No one had ever indicated to us that there would be other diveable points.

So by the time it came to expedition time, October in '79, I decided, to go dive on one of these other points that we had discovered, the shallow points.

There's a ridge up near the north which I tentatively called Tor Hakluyt. Tor means "mountain." Hakluyt was a cartographer in the 16th Century, did a lot of the maps that we now know as classics.

So we went for that as a target. Everything seemed to be going just fine. We went out there and we eventually found a shallow place. It was not 20 fathoms; it was something like 22 or 23 fathoms, fathom being six feet.

So, you're talking about 140-50 feet, that was still acceptable. We dropped the anchor. We had not yet evolved reliably the technique of going up current and hooking on the back side. So we dropped the anchor thinking we were hooking on the place.

The anchor seemed to be stable. So I decided we'll get the team in the water. The first team was Bill Kruse, Tom Santilena and Tom's brother John Santilena.

01:05:25

My strongest divers, and year after year I used them for the first dive because they had to be adaptable and resourceful. If anything went wrong I wanted them, more than myself, to be there, because they were better than I was – stronger at handling the diving, the mechanical aspects of diving.

Everything seemed fine. So we put them in the water and watching the watches and eventually the time went by and we were saying, “Well, they’re about half way through.” And suddenly Bill Kruse came zooming out of the water like a Polaris rocket. I mean, it seemed like he leaped completely out of the water, which he couldn’t have done, but it seemed like that.

And simultaneously let out a yell that sounded like he had just lost the lower part of his body. And I muttered, “Shark.” And I thought that we would see nothing of Bill but a few shreds. I thought that was – this was a disaster in real time.

And pretty soon John Santilena came to the surface away from the line, but clearly under control, and eventually Tom came to the surface, I believe it was on the line. And Tom came up, but Tom’s a very calm, collected guy, and he came to the surface, he says, “Well, how’s it going?” or something, you know, like that.

And I said, “We’ve got a major emergency going on here.” He said, “Oh, really? What’s the problem?” I said, “Well, Bill’s out there and he’s probably dead.” And Tom said, “Oh, no, no, Bill’s all right.”

So we went around and we collected these people, got them out of the water and said, “What happened?” And what had happened was they went down the line, John had a goodie bag for collecting specimens, Tom had camera and Bill Kruse was the safety diver, I think.

They went down the line and down the line, the visibility was wonderful, there was no current to speak of, and they got to the bottom of the line and the anchor was floating about 15 feet above the bottom and drifting away.

What apparently had happened was we had dropped the anchor on the down current side of a cliff, as the sea and the current lifted the buoy, which was actually an inflatable boat now; it had pulled the anchor up off of the bottom enough so that it was completely off the bottom.

And as it drifted further the bottom got deeper and deeper, so it never got on the bottom again. Because you have to remember, these are tiny, narrow ridges. So by the time they were going down the line, and there's no visual reference out there. We had no idea they were completely way off of the shallow place.

So they went down to the bottom, or near the bottom, they could see the bottom right below them. John and – well, actually all of them went right to the bottom. They let go of the line and went to the bottom at 205 feet, collected some specimens, not many because there were not many there at that depth, as you know from the photographs.

Tom took some photographs, the first photographs taken on Cordell Bank, at 205 feet. And as they surfaced Bill Kruse's dry suit valve stuck and it inflated him like a dough boy and he came out of the water at an uncontrolled emergency ascent.

And he did the sensible thing, he yelled. It sounded like he was being killed, but he yelled to get our attention. So they had done superbly, this team, incredible. And I just couldn't believe that they had done this. And I didn't even know that they had gotten specimens. I knew that he said he'd taken some pictures.

And we were all just sort of regrouping and getting our bearings and calming down and John said, "Well, did you look at the specimens?" And I jumped up and I said, "Specimens? You got specimens?" And sure enough he had a small collection of specimens which in the overall scheme they were pretty inconsequential, but these were specimens.

01:10:08

So we had not only done it the previous year, we did it again to show how good we were, and we had photographs now. So we

could now claim – we didn't want to show the photographs because they're pretty meager, but we could now claim we are capable of collecting specimens and taking photographs at the bottom at Cordell Bank.

That was good enough for us to throw another public meeting at the Cal Academy, which we did, in the same room. And we had about the same number of people. But unfortunately, we didn't have, you know, a huge inventory of, you know, a rich collection of things. And so we made the most – got the most mileage out of the tiny collections that we made.

But the success that they had in doing that under those conditions allowed me to decide, "Okay, we can still do this. We're not going to close the expeditions and stop. We will try it again next year." And from the next year on we did very well.

Livingston:

From what you had learned in the first and here second dive, did you alter your preparations? You must have learned some things to help you prepare.

Schmieder:

Well, I think we learned that it's critical to know how to set the descent line and how to test it. So when we would put the line down, first of all we evolved this technique of hooking the backside. Then we would get the inflatable tied on it. We would test it. We would pull on it. We wouldn't just assume that it was in place. It may hit the right place but it might not stay there.

And these are hooking type anchors, not deadweight anchors. So we did that and that enabled us to get a more reliable descent line.

The gear and the procedures, the rules that we had evolved at the beginning of the project didn't change, they were always the same. Single dive for a team, for each person, twin tanks, octopus regulators and so on. The goal also did not change. The goal always had been, "Let's go and explore. Let's find out what's at Cordell Bank."

I knew at the outset that we could not do systematic science. We had to do grab-sample opportunistic science, and that's all we were

ever able to do. In fact, to this day unless you bring in much greater resources that's all you can ever do at a place as difficult to access as Cordell Bank. So the goal didn't change either, just the time frame.

Livingston: What happened to your first divers in 1978? There are four divers that we haven't heard of yet.

Schmieder: Well, I should have been more cognizant of the naturalness of people's evolving interest. After all, we had started with 40 people at the Geological Survey and by the time we actually dived a year, plus later, there was only one person, me.

I found that very frustrating, even found myself feeling angry at abandonment, if you like. We would come up to Bodega Bay and the divers would say, well, they would look at the ocean and they would say, "That doesn't look like fun."

My reaction, which I was not always able to stifle was, "Well, we're not here for fun, *are we?* We are here for science." So I should have been better prepared.

After we had the first dive in 1978, and that was so successful, to my surprise and I guess disappointment, some of the people just sort of got – just sort of drifted away and got interested in other things.

I can't really say what their motivation was in the original dive, maybe it was just simple curiosity and then it was satisfied. Of course, by that time, and long since before, I was deep into a lifetime obsession. I was prisoner to my own obsession about this. So there was no question of me drifting away.

And when other people would drift away I would be disappointed and frustrated and a little bit irked that their commitment was not mine.

01:14:58

This was especially astonishing to me when one woman, a potential diver, said, "Well, no, I don't think I can be away from my fish for more than two days. So I won't be able to do this."

And I said, "What? Your fish are more important than science?" I don't think I said it to her, those words.

So Steve Lawler, who had been a very important principal in this project, had really taught me a lot about diving. He knew about projects. He knew things like the Latin binomials for species or genus species, you capitalize the genus and you lowercase the species. This is the way you write it.

By that time I understood that, but he knew it. And so he insisted as we would sort specimens, he insisted on getting those things right because otherwise we would look like silly amateurs. Maybe we were but we certainly didn't want anybody else to think we were silly amateurs.

Dannie Baxter was always a little distant. I never got to know her very well, and she had a husband and they had other interests. So I think they just sort of had other interests.

Don Griffin faced some medical problems and I don't know any details about that. But I respected that a lot. He just felt that he couldn't – he stayed involved for a while.

And Larry Pfoutz, I guess was similar. He just sort of had other things he needed to do in his life. And it was sort of that transition – '78 through 1980 – that I saw that people would come in and they had a latency period. They would come in typically for a couple of years, then they would drift away.

The core group which was myself, plus Don Dvorak, Tom Santilena, for a long time his brother, John Santilena, Harry Sherman, Paul Hara for some time, Bill Kruse, Sue Estey. Those are the people who stuck with it from their beginning until the present time and are still deeply involved as witness whenever you have a [Cordell Bank National Marine] Sanctuary event. We all show up. And we're not here just for the baloney.

No, whatever that metaphor was. I should say doughnuts. We're not here for the doughnuts. We bring the baloney and we come for the doughnuts. Okay.

Livingston: So now 1980, you went for a third season. And so could you describe the events of that season?

Schmieder: The third season started just like the others with a fair amount of planning but now less planning, because we didn't have to talk so much about plans. We basically had proven that our preparations were sort of right.

What consumed a lot of time in that year between the 1979 dive and the 1980 dives was meeting new people, getting new people in because I needed a lot of people at that point, and they showed up in droves because the word – the reputation was around there's this project. And there were a lot of people who really want to do things like this.

So we had lots of people but I insisted on doing a practice dive, full gear, 150 feet, decompression, with every new person. He couldn't go to Cordell Bank with me if I didn't do a practice dive with you.

So that consumed a lot of time. I was down in Monterey diving with new people a lot. And then by the time we were getting ready to go back to Cordell Bank in the fall I spotted a boat in the marina at Berkeley and kind of wondered who owned this boat because it seemed to be about the right size and it was kind of a romantic looking boat. It actually had been a shrimp fishing boat.

As I subsequently found out, it was owned by a man named Breck Greene, and he had brought it from Louisiana through the Panama Canal which he moved to California after his first wife passed away.

So I left a note on his window saying, "Would you like to make this vessel available for a National Geographic Oceanic Expedition?" Carefully worded, not a lie, I had a small grant from National Geographic by that time.

01:20:07

And I subsequently found that he and his sons had strategized for days, "How can we get these guys? How can we nail this

expedition – this Geographic expedition.” When we finally got to know each other he saw it was really just a group of enthusiastic amateurs doing this. But he decided to do it with us anyway.

So for a fairly nominal charge, essentially the fuel, he agreed to take us out there in this boat. It’s 67 feet at the water line. Shrimp boats have a round bottom. You can imagine how this thing rolls. So everyone except me, every time we would go out on this boat, everyone except me was deathly sick.

Why was I not sick? Because I always had something to do. I had to manage people and take data and stuff like that. Besides I’m not generally sick.

So we got into agreement with Breck, introduced him to the group, we got familiar with the boat, and then we started loading it up with as many as 20 divers plus miscellaneous support people and gear to process specimens and so on, and we would go out to Cordell Bank.

Sometimes we would succeed and sometimes not. One time we went out, we would typically leave Berkeley at 2:00 in the morning or 1:00 in the morning, and try and sail all the way up to Cordell Bank and then back to Drakes Bay.

Well, we got out a little past Mile Rock, actually a mile or two past the Bonita Light, and the engine coughed and died. And Breck went down below and pretty soon we realized he had forgotten to put fuel in the tanks. We ran out of gas, believe it or not.

And there we sat for hours until the Coast Guard came around. In those days they didn’t send Vessel Assist which you have to do now, commercial organization that you pay, the Coast Guard would rescue you. So we waited for some hours, almost until dark until the Coast Guard vessel came out and towed us all the way back to San Francisco.

Another time we went up to Drakes Bay and the weather out to Cordell Bank was pretty bad. In addition Breck had the regrettable, and apparently unalterable, habit of sailing around the

point right at the head at Point Reyes, right close to shore. Well, even an amateur knows that's where the big swells and surf break. And then he would come into six foot waves and turn around and say, "This is way too rough."

"Breck," I would say, "move out three miles off of the head. It's calm out there." But we were not always successful in doing that. But sometimes we were successful. This was an opportunistic project, after all. So sometimes we would go up to Drakes Bay, spend the night, 4:00 in the morning we would sail around the corner out to Cordell Bank.

And at times during that year, 1980, we would have conditions like the first year, so calm the gulls on the surface would make these ripples that would expand 10, 15 feet out.

You know, we would be in ecstasy with that. And with eighteen divers, say, we would make six teams of three divers. The rule was only one team in the water at a time. We'd get the previous team out and debrief them, and let them make the call, "Is it safe to make another dive."

And on several of the days during that year we got all the diver teams in one after another and safely back to Drakes Bay with our goodie bags chock full of specimens, huge, probably 150 pounds of specimens.

Don Dvorak would take his cameras, he mounted three underwater cameras on a bracket and he would go down to the bottom and come back with more than 100 photographs of the bottom on a single dive.

So that was the year that we essentially used the validation of the techniques that we had evolved to carry out a much more extensive exploration and documentation of Cordell Bank.

And by the end of that year we had a huge number of specimens, huge number of photographs, charts of new pinnacles that we had discovered. We discovered five of the six or four of the five shallow points.

01:25:05

And so that formed the incipient body of knowledge about what Cordell – and I was able to pull together a preliminary summary of what we knew about Cordell Bank, including some species – a beginning species list and the charts and the observations of the divers and some of the history, which by that time I had elaborated all the history with Edward Cordell.

So by the end of 1980 we were starting to get a pretty good idea what was at Cordell Bank, and felt pretty confident that we could carry on as long as we wanted to. And that was about the time that I became aware of NOAA and the Sanctuary Programs Division and that road less traveled made all the difference.

Livingston: So in these first three dives you were still unregulated really, you were still on your own.

Schmieder: That's correct.

Livingston: And did you say how many dives you made in 1980?

Schmieder: I didn't say and I don't actually remember, but I think there were probably three successful trips that year. And when they were successful they generally were very successful. We went with, you know, all the divers and a lot of specimens.

We had one trip, I think it was actually a later trip, John McCosker from the Steinhart [Aquarium] was with us, and the first team down had trouble, and I had to abort the diving for the rest of the day. John was already suited up, ready to go in. So it was a very great disappointment on that case.

And we had days like that, but we had enough successful days, I was satisfied with statistics. You know, if we have partial success, that's success.

Livingston: And you dived during 1980 as a member of these teams.

Schmieder: Yes, I was always a diver, '79 I was not – I didn't do that one dive that Bill, Tom and John did.

Livingston: Could you describe your experiences of those 1980 dives?

Schmieder: My dives were generally less exciting, less stimulating than the very first one was. Because as I described, the very first dive was accompanied by this overwhelming rush of having crossed a threshold.

Here we knew that we could do this, and so it was a question not of existence, but of performance. So my task was to collect as many specimens as possible, fill that goodie bag. And sometimes I would take two goodie bags, fill them with as many as possible and as diverse collection as possible.

And I would exhort the team to, "Do not collect multiples of the same thing. We have lots of the *Allopora californica*," the California hydrocoral, "get different things. Wherever you look if you see something that you don't recognize, that's a good candidate. We're not trying to make a plot, we're not trying to survey this, we're trying to collect things."

And we used the words "rape and pillage" and things like that. Of course, we couldn't do any significant damage, just negligible stuff that's healed rather quickly. And so I kind of prided myself, I was satisfied with myself that I would collect large amounts of things.

It seemed like the other divers never quite caught on to how much mass I wanted collected. They would come back having picked a few things and would say, "Well, I didn't want to damage the place." Or, "I wasn't sure about this. I thought about this and I picked a few things very carefully." I said, "Where's the rape and pillage part of this?"

So I was routinely kind of semi-disappointed in the aggression that the other divers would not have when they were collecting. And I ripped and tore and collected huge amounts of things.

Of course, we can wince when we think about that, but it was local in time and space. It didn't harm anything. And after all, as I tell my students on the boat now, "If a few things don't die and enable

us to learn about this place, many things will die in ways that we don't want to even think about. So this is a good use for these materials." And the students always agree.

01:30:17

Livingston:

Did you continue the rule about no artifacts during those dives?

Schmieder:

Yes, that was the rule. But by that time I had a team that was oriented about science collecting and we knew that we were after invertebrates and photographs. So no one was tempted. I actually didn't have to beat anybody up about no artifacts.

We saw them. We would see a lot of filament. Now and then we would see an anchor, we would see a fair amount of lead. Quite often we would only see those things inadvertently. It was covered with anemones and sponges and things. But clearly there had been a lot of debris.

So I started describing this when I would give a talk. I would answer the question, "Do you see any fishing gear or any gear?" And I would say, "Yes, but the Bank is such a vigorous environment that if you leave something there it will get covered in a relatively short time. And as long as it's not toxic or decrepitatious or whatever, it'll be okay. It's just become part of the bottom."

Breaking things is a different matter because very quickly – and it was during that year, 1980, that I first started noticing how much broken hydrocoral we were seeing. And it was an amazing sight to see all this stuff. And at first I assumed it was fish that were bumping into it and knocking it over. But then I said, "Well, fish wouldn't do this. They're smarter than that."

And eventually I realized it was the fishermen with the fishing technique of feeling for the bottom with a lead ball that was doing the breaking. And I started talking about that and that I talked about all the way through the Sanctuary hearings and the development process, and in my comments here and there that this was a significant effect on Cordell Bank.

Livingston:

So these 1980 dives is when you first started observing that.

Schmieder: That's right.

Livingston: I became aware of it, at least. The first dive, of course, I didn't see the bottom and there was not much to see in the second dive in '79. The first dive was exquisitely beautiful as I described and I didn't notice if there was breakage like that. I just simply didn't notice it. But in 1980 I started noticing how much damage there really was.

Schmieder: Now, you had mentioned a small National Geographic grant. These dives of '79 and '80 got quite extensive. How were those funded?

Livingston: By and large with the exception of the NOAA Sanctuary Divisions money during – for two years, I think it was '82 and '83, and small amounts of other things which I will mention; this was just a joint self-funded project.

I would make a budget; a rough estimate of what it was gonna cost us. It was Breck for his boat. I didn't try to buy group equipment or expedition equipment. In my subsequent expeditions many years later I budgeted and we would go out and buy tents if we needed them.

But here I kept the budgets low enough – of course, everybody had to take care of their own dive gear, their own food – not the food, the transportation, and so on. And if someone would lose a camera, I'm sorry, we're not gonna fix it for you. It's just the risk you take.

Then I would say, "Okay, here's what we need from you for this weekend is \$40," or \$80 or some numbers. And we would buy the food and there was generally a wife or another person or some of the expedition members who would do the cooking.

So we would make chili or we would make tacos, steaks usually Saturday night on a barbecue. And the budget was just a shared expense. A couple of exceptions, the Geographic grant was all of I think \$1,500 and it was very valuable in the sense that I could put

the note on Breck's boat, say, "Would you like to make this vessel available for a National Geographic expedition?" And it got him.

01:35:12

I also had a small grant from the Explorers Club. I think it was \$1,200. Because they have a fund for sort of Junior Explorers. Well, I was not a junior by any means, but I certainly was not a person of Heyerdahl and Hillary's reputation or stature.

So they gave me a little grant, and of course, I was not a member of the club at the time and didn't even think that I would ever become a member because the Explorers Club has serious explorers in it, at least most of them are.

It wasn't until much later that I actually was invited to become a member. But we were very proud of those grants, small as they were. Then when I got to interacting with the Sanctuary Programs Division they asked if I could use some money. And I had a ready answer. And so we figured out how much – and I think it was about \$15,000 or \$17,000 each year, which for us was big money.

By that time Breck was wanting more money for the boat. So most of that money went to the boat. And I think I started using some of that money to buy alcohol, formalin, jars, things that I formerly had just squeezed out of somewhere.

And I think I just used those small amounts of money to get things that I would have paid for myself personally before. But it was a bigger project by then. We needed more things.

Livingston:

And that time that you're talking about where you started to get these bigger grants, this is after 1980. Is that correct?

Schmieder:

Yeah, I think that was '82 and '83 that NOAA actually provided the funding. I'd started talking with them in '81 or somewhere close to that.

Livingston:

So this is the end of the interview on June 25, 2009 with Bob Schmieder, and it will be continued at a future date quite soon.

[01:37:36, end of audio file 2. Begin audio file "CBNMS Schmieder 3" at 00:00:00]
