

ORAL HISTORY

Hovey Clifford March - May, 2001 - Interview by Frank Taylor

Frank - Good morning. We are in the WHOI archives vault to talk to Hovey Clifford today. Hovey is a long-time Institution employee who just recently retired. He has a huge interest in history and the history of the Institution. He has agreed today to do an oral history. Hovey, let's start off with a little bit of your personal history, when and where you were born, who your parents were, things like that.

Hovey - Thank you Frank. I was born in Boston on the last day of the year, 1936. In fact, my Mom claimed that I popped out about 11:00 p.m. and she could have held me to be a New Year's child, but Dad convinced her that he'd like to claim me for the year 1936, and so around 11:00 I was born, December 31, 1936.

Frank - What was your Mom's name?

Hovey - Her name was Frances Bullard Clifford and she said she could trace the Bullard lineage all the way back to the Pilgrims and Plymouth, but when I go down to Provincetown and look at all the old names I don't see any Bullards there, but maybe she was related to one of them. She was a lovely, lovely mom. She was a homemaker. She was an artist. She loved to do arts and crafts. She taught night school for her friends in Rockland. She braided and hooked rugs, and painted with both oil and water color paints. We grew up in the Unitarian Church in Rockland, and for Christmas fairs to make money for the church Mom made apple ladies. This was no more than peeling an apple and cutting out a face and then letting the apple dry. They would dry up into these wizened dear old ladies, and then she had remnants of all kinds of cloth so she'd dress them with fancy hats, costume jewelry and makeup and give them to the church for the Christmas Fair. They would last forever if you kept them dry and didn't let the mold eat them up. I have fond memories of my Mom doing things like that. My Dad's name was Kenneth Elijah Clifford. He was a wonderful dad. He worked in the wool business in Boston. He was an office manager. It was a two-person office, but he managed that office. Roger Hadley was the wool dealer's name and Dad worked many years for him.

Frank - Was that back in the days when American Wool and all that was based up here on the East Coast?

Hovey - Yes. His office was on Summer Street right opposite South Station.

Frank - Now you were living in Rockland at the time?

Hovey - Correct. And he'd have to make the trip in every morning and every evening back home again. There were other Rockland friends that worked in Boston and they would carpool together.

Frank - Now did you have any siblings?

Hovey - Did indeed. I was the oldest of four. I have two sisters whose names are Carol and Stephanie and my brother's name is Roger. My two sisters currently live out of state, but my brother Roger lives up in Hingham, so I see him every couple of months. He recently married. He didn't marry until he was about fifty - a long time bachelor, but then like the rest of us when we finally meet our loved one we fall like a sequoia tree. He just did it later than the rest of us.

Frank - Pretty close family then?

Hovey - Yes. My Dad after twenty-five to twenty-seven years of marriage fell out of love with my Mom and, in fact, fell back in love with a close friend of the family, married her and moved to Boston during the late 1950's. But even though my Mom and Dad had stressful times the rest of us kept very much in touch. He then moved from Boston to Maine where he actually grew up and lived the rest of his

life in Bath, Maine. His second wife is still living up there, but he died a couple of years ago. We kept strong connections.

Frank - Was that a stressful time for you?

Hovey - Yes it was. I was in the Army at the time when I heard that he had left the family and it seemed like the two boys sided with Mom. My brother and I sort of saw her side of things, but because I was away I never saw the breakup coming. My two sisters sort of sided with Dad but that didn't interfere with our relationships. We accepted that and stayed close.

Frank - Where do your sisters live now?

Hovey - One sister, Carol, lives in Rochester, New York. Stephanie lives in Jonestown, Pennsylvania. She works in the Hershey Chocolate factory.

Frank - So what does the one in Rochester do?

Hovey - She's a homemaker. She sort of got a little bit of my mother's artistic abilities and she dabbles in arts and crafts. Her husband is a retired IBM employee. They have four girls. They are all adults now. One of the four got married a year or two ago and we were able to get out there and have a wonderful family reunion. My sister Stephanie came up from Pennsylvania and my brother and his wife drove out from Hingham. The family is still relatively close with the telephone and e-mail and things like that.

Frank - Tell me about your education - what schools you went to and things like that.

Hovey - Okay. But let me just touch on my wife and daughter. I'm married to Mildred Rose Monahan. She's a homemaker. She's also a self-employed seamstress. I've known her since the first grade of grammar school, McKinley School, thirty-five years ago - more than thirty-five years ago. I began school in 1942. It was a small elementary school in Rockland. There were two or three elementary schools located in the town and this all fed into one high school, Rockland High School. Although I don't particularly remember her in Miss Lannin's first grade class or Mrs. Greenan's second grade class - she sat behind me in Miss Healey's third grade class and I think then because we were so close. We were schoolmates right up through high school and I lost track of her after high school because we went to different colleges. She went to a legal secretarial school - Chandler, I think, in Boston for a couple of years and then got a job on Federal Street in Boston. As I'll tell a little later I went to Brown University for a couple of years and didn't hack it and then found a job in Boston working in a printing factory. Initially I commuted with my Dad until driving on the Southeast Expressway became too nerve-wracking. It seemed to us that the expressway couldn't handle the volume of vehicles even on the day it opened. So we would go to North Abington and use the train to commute to Boston. I would on occasion work overtime at my job in Boston and take the late train, the 9:32 out of South Station to North Abington, and happened to see this lovely lady also taking the 9:32 home. So I said she looks familiar and I said you couldn't be Rose Monahan from high school many years ago. And she said sure. And it was from then on that I knew who I wanted to spend the rest of my life with.

Frank - I've heard of people who have gone back to their high school sweethearts, but going back to first and second grade is really a trip.

Hovey - Let me tell you a particular story that I remember in the third grade. She sat right behind me. One of the important things that stuck in my mind that we learned in the third grade was how to spell, and Miss Healey would have a little spelling test I think just about every day. She'd hand out little strips of paper with maybe fifteen lines on it with the top line where you'd put your name, grade 3 and the particular subject you were being tested on - in this particular case "spelling" and Rose and I were good students and we would compete a little bit. I remember this even back in the third grade. The student at the head of each row would get the blank papers, take one and hand the rest to the student behind - so forth up the row. I would take mine quickly, hand the rest to Rose and turn back to my desk to write

"Hovey Clifford, Grade 3 Speling" and I'd turn around to check that I had written my spelling test heading faster than Rose. What did I see? "Rose Monahan, Grade 3 Spelling". So I humbly turned back to my paper, crossed out my word "speling" and then spelled it correctly "spelling".

Frank - So how about children?

Hovey - I've got one grown daughter, Sheila Alicia Clifford, and she is currently a WHOI employee working in the Chemistry Department with Susan Casso.

Frank - Now how did she happen to get into that?

Hovey - It came from my background, I think. In her mid school years - I'm going to say 5th, 6th, 7th through high school - the conversations at home contained a lot of science stuff because of my working here at WHOI. So there was a tendency for her to be very familiar with scientific concepts and things like that not that it was our main conversation but she was familiar with it. She seemed comfortable with math, biology and chemistry, so when it came for the science fairs in the lower mid grades and into high school, she was interested in doing projects for the science fair, perhaps along with some prodding from the school science teachers. I would bring her to WHOI and I think I was working in the Biology Department or maybe the Chemistry Department at that time. We developed a close association with Judy McDowell Capuzzo, a lovely, lovely lady, and also with Bruce Lancaster and Dale Leavitt who worked for Judy. I might have worked for John Farrington then and Judy and John were doing a lot of science together. I didn't think it would be right for me to be Sheila's mentor for the science fair since I was her Dad, so I introduced her to Judy Capuzzo at that time and Judy being the wonderful lady that she is just made science even more interesting to Sheila. She went to Brown University where her interest was Egyptology and then after Brown Nautical Archaeology at Texas A & M.

Our roots had always been strong back here in eastern Massachusetts. Both my family and Rose's family lived in Rockland and Rose and I wanted to come back after Scripps. Sheila also wasn't one to stray far from home. It was natural for her to seek employment close to home, and because of her oceanographic background she tried to get a job here. She knew Susan Casso's children in the Falmouth school system and part of my WHOI career was spent with Vaughan Bowen's group in Chemistry where Susan worked before she became Executive Assistant with the Chemistry Department. Sheila was also friendly with Karen Farrington, daughter of John Farrington.

Frank - Plus that was a period maybe where this was a much more family friendly kind of place.

Hovey - Right.

Frank - Tell me what it was like to grow up in Rockland in this particular period?

Hovey - Well, it was a small town. It hadn't fallen under the influence of a superhighway from Boston to the south shore. I remember a wonderful main street - we lived about a mile and a half from the center of town. I remember stores along Main Street and a theater in the center of town, well-attended churches and elementary schools. A quarter mile from the center of town was the high school. But it became a bedroom town once the expressway opened with nearby large shopping malls, Hanover Mall, Braintree Mall, etc. And it just changed Main Street into a blighted area. The theater burned down. So this nice warm smallish community started to change. Rose's mom and dad lived there until they passed away. My family, once my sisters and brother finished school soon after moved away from Rockland. Dad moved to Boston. Mom remained in town so there was always the desire to return and visit our parents in Massachusetts. Rose and I grew up near the ocean and the marine environment was just part of our blood and we had to come back. We were lucky and happy that our future led us to the Cape and Woods Hole Oceanographic.

Frank - Tell me a little bit about your schooling now.

Hovey - From 1942 to 1948 I attended elementary school at McKinley School. Smallish classes - let's say my graduating high school class of one hundred was fed by three elementary schools. A class through elementary school was roughly twenty-five kids. That seems like a lot but it was good old times, a ruler across the knuckles, you had to behave. An unfortunate side of my early schooling was the emphasis placed on memorization as a way to succeed rather than thinking and that persisted even through my later years. And that's the way it worked out.

From McKinley School I moved on for the next six years to Rockland High School. I can recall most of my teachers even up through high school. Rose and I weren't social butterflies. I can recall friends in high school. Both she and I when we were old enough had after school jobs. She worked in the Rockland Library. I had two jobs because my boss owned both businesses, a bakery in town and a shoe store, so I just flip flopped back and forth depending on the need, but would work until 6:00 and head on home to dinner and then study. But we went to an occasional dance at school. We were close friends during high school. I don't think I was an outcast or anything, but Rose as a Catholic had friends in her church. I was a Unitarian and participated in the youth group and had friends there but didn't do much out of school activities. I think I would have loved to have played sports but then just didn't have enough time. I was a track manager for the track team in high school but didn't participate. But I did love to go to the games.

Frank - Okay, so you had your day in school and you had your job, what did you do to just kind of kick back. Were you a reader, did you listen to the radio a lot?

Hovey - I think my favorite thing to do was - when I grew up World War II was going on and reading World War II stories, fiction, I was very much taken by the World War II fighters. That developed into building balsa wood models and P-51 Mustangs and P-40 Hellcats. My Rockland residence, one of them, was close to the South Weymouth Naval Air Station, and to this day I can remember taking rubbish out. Back in those days it was all right to burn the rubbish in the back yard and we had a fifty-five gallon steel drum with holes punched in it. I'd burn the rubbish and look up and see the big Navy Corsairs flying around the house to the air base. I remember blimps there too protecting the coast - not like the English Channel or anything. But the blimps were a popular item and a big landing strip was over there. It was a couple of hundred yards for us to walk to the fence and look out into the landing strip and see the blimps and the planes over there.

Frank - You know I'm a little older than you but I grew up in the same period. I remember being fascinated with the planes of that era. It really has become a formative thing in the way we all developed.

Hovey - So after high school I was -

Frank - A couple of questions before we get to after high school. Did you have any favorite subjects in school?

Hovey - Yes. I studied in high school - Mr. Cogan taught us chemistry. Biology. I remember taking a liking to biology, and my math subjects, algebra, geometry, trig (they came easy to me) , but again I was one who had to go home and study but with an effort along those lines I was able to retain that stuff and I was able to perform and test well and so I did very well grade-wise in high school.

Frank - Well it's interesting that you come from a family that valued art very well. Was that a thing in your life too?

Hovey - No. Well I was exposed to it continually. Mom and Carol and Steph a little bit. The female side of the family dabbled in it and Mom would bring home all her paintings and treasures that she'd create so it was something I was around continually, but it just never rubbed off on me. I could print nicely, had a wonderful hand.

Frank - The Palmer method?

Hovey - Yes indeed, but with a little bit of pushing I might have. I occasionally love to draw, but I think I'm more comfortable and more appealing to me are angles and squares where I can draw straight lines rather than a body or something like that. Mechanical drawing I enjoy much more than pictures.

Frank - Now do you remember growing up at all?

Hovey - Not much. Even to this day I don't read a whole heck of a lot. I have recently become interested in astronomy. Fiction never had a real draw beyond those initial World War II books that I touched on a little bit ago. Older boys than I passed them on to me and I just couldn't read enough of them.

Frank - Well you finished high school. What happened after high school?

Hovey - Because of my good grades I got into Brown University. Ivy League even as it is today it was then quite expensive and it kind of strapped my family so I had to work an awful lot of hours down in food services in the refectory. And I really wasn't prepared for college. I think maybe a little kick in the pants might have opened my eyes a little better, but I kind of squandered my available study time, didn't really apply myself. I was in the NROTC so I got a little bit of financial support there. But after my third year (I was in a five year program) my grades were borderline and my counselors down there suggested that they weren't kicking me out but they suggested that I go home for a couple of years and see if I could save money so I could return to school. They left it open that I could return to Brown, come back with enough base and financial support that I could devote all my non-class time to studies and I thought that was good counsel. So at the end of 1957 I left and started working at Court Square Press in Boston, which was a big printing factory.

Frank - Was this a case that you just kind of went through the want ads?

Hovey - Actually, my uncle, Parker Bullard, my mother's brother, was a close friend of the owner of Court Square Press and he was able to get a job for me at this shop and I became a paper cutter operating a big Seybold guillotine paper cutter, a thing with a big steel platform that could cut through reams of paper sometimes before or sometimes after the paper went through the printing process. It worked off a great big spinning wheel. You could clutch into another wheel that would pull the blade down. You had these great big reams of paper on the platform and the blade actually penetrated into a one inch strip of wood across the platform. That's how I lost the tip of my little finger.

Frank - I was just wondering.

Hovey - Yeah

Frank - What were you majoring in when you were at Brown?

Hovey - I hadn't gotten to the point where I had picked my major, but I at that time was very much infatuated with a Dr. Clapp. He taught organic chemistry and made the subject so visual. Many of his lectures featured chemical compound structures and reactions clearly presented on the class blackboard. He was an inspiring instructor. He did demonstrations where he would pour one chemical into another chemical and turn it into a rubber ball and take the rubber ball and bounce it on the floor and it just amazed me, and even though I was still sort of a biologist-zoologist kind of a person there was this new interest in hydrocarbon chemistry - organic chemistry.

Frank - It's an interesting transition, Hovey. You've just gone from what is today and was then one of the most difficult colleges in the world to get into with terrifically high academic standards and all that and you're suddenly switching out and you're working as a papercutter. Was this difficult?

Hovey - I was still struggling with my aim in life so to speak. Court Square Press - I started there in 1957, worked about a year and a half when Uncle Sam called me in November of 1959. It opened my eyes up that this job of commuting I didn't think too much of, a very routine kind of a job doing the same

things day in and day out. I met a nice group of people there, less educated, but grand people, joined the bowling league and would participate in some of the weekend, spring, summer get-togethers that the shop would have, but my touch of beyond high school education, college education, and realizing I didn't want to do something the same repetitious job day in and day out - I gained that from this job and got drafted November, 1959, and this was also another enlightening experience. I immediately realized that the military was not in my future. But it's funny you go through these different stages in life and you try to extract the good things, the learning things out of it. I met some special people in the service, never saw action. I was in the service for two years, three months and eleven days. Back in those days when you were drafted you had two years active duty, two years active reserve and two years inactive reserve. You were drafted for a six year commitment, but under those conditions. It was 1961 when the Berlin Wall got thrown up and President Kennedy extended all of us, so that was the extra three months and eleven days, but because of that they cancelled out all of my reserve commitment, so when I got out of the Army I was discharged honorably and didn't have to do anything after that and also got Veteran's benefits to further my education if I wanted to, which I did.

Frank - Now what was your MOS in the service?

Hovey - Okay, I did basic training in Fort Knox, Kentucky, colder than the dickens.

Frank - I was there in the summertime. It was hotter.

Hovey - Then after - I've actually forgotten what was it a couple of months of basic training?

Frank - Eight weeks

Hovey - I went a couple of months to Aberdeen, Maryland, to liquid propellant school. At that time, although I never . . . that's where I met a couple of my close Army friends, never touched liquid propellant after the school, went to Fort Campbell, Kentucky, as my permanent station and was a member of the 101st Airborne Division.

Frank - So was I.

Hovey - Fort Campbell. We never had to jump. We were a supporting unit. We were in an artillery supporting unit, but they were solid propellant Hercules that the airborne division used, so all of our two months of liquid propellant school just went poof, never touched it a bit. We were a supply company, would move the Hercules to the front or wherever the 101st wanted them and would maintain and have them at the ready, so we would at home go through all of the little playing in the field, bivouacking and all of that. Oh that reminds me of a little story. I'll see if I can remember. But in any case we never had to participate in the jumping, saw an awful lot of it when they practiced and the 101st was a part of the STRAC forces in those days. They had the ability of quickly getting into a large transport and flying to a conflict area.

Frank - Quick response.

Hovey - Yeah. Well, this little story. Five of us came out of Aberdeen at once and went to the same company that supported the 101st and when the five of us arrived from Aberdeen the company was going out into the boonies to play war. So the five of us couldn't be put into squads immediately. So here we were out in the boonies and what were they going to do with us so they asked us to be permanent KP for one week out in the boonies. None of us thought about making the Army our permanent life, we were sure. We were in for our two years. All of us had been drafted. Okay we were out in the boonies, pitched our little pup tents, two-person pup tents with all our gear. And the chief cook, steward said in order to put all of our waste materials we need a hole over there 6x6x6. That was a big, big hole in Kentucky red clay. Frank, I'm telling you, five of us busted our behinds to dig that out in time for supper or whatever the next meal was. I hated chili. I hated the big red kidney beans. I grew up eating Boston baked beans every Saturday night and I still do. I love Boston baked beans, my brown bread and either franks or hamburger, but never developed a taste for great big red kidney beans that you find in chili.

What did we have for supper that first night out in the boonies but chili with the great big red kidney beans. But we had developed such a hunger busting our behinds digging that hole I could not get enough of it and I've loved chili ever since.

Frank - In the Army you did some strange and interesting things. And I think you're the same as I am. To this day the things I remember about the Army for the most part are all the good things. All the bad was - I mean I met some wonderful people in Kentucky, I mean going to places like Mammoth Cave when all their facilities were sold out and having them move people out of their rooms that worked there because we were servicemen they'd find a place for us, and on the other hand I can remember women in Louisville pulling their skirts aside when I walked by too.

Hovey - One of my special remembrances, three of us were exceedingly close. The other two of the five, indeed were close, but again not as tied together as the three of us, a chap from Pennsylvania, Ed we used to call him Ed B.A. Barton, short farmer, stocky, stronger than the dickens and the B.A. stood for "bad ass". He was supposed to be tough, but he was just a teddy bear, but we nicknamed him that B.A. The other close dear friend was Jimmy Bentley and he grew up on a farm near Tallahassee, Florida. His parents and family had a marvelous shade tobacco farm lots of acreage with irrigation ponds that were well stocked with bass and pickerel and things like that, cows and horses and cane sugar, where they'd make syrup. And it was very easy for a long weekend or a week leave to drive the width of Tennessee, the length of Alabama and the roads were good so we could do it in ten, eleven hours clipping along and then a little bit on to Quincy, Florida. Quincy is relatively near Tallahassee, which is out on the panhandle of Florida. So we could go home to the farm on numerous occasions where Ed and I were very welcome to the southern hospitality of Jimmy Bentley's family, and I have wonderful memories of fishing the ponds, shooting squirrels out of the trees, chasing animals around, shaking pecan trees and it would rain pecans. Jimmy's mother would make pecan pie that would just blow you away, and southern fried chicken that melted in your mouth. The wooded areas on their farm supported a large population of squirrels. They were so plentiful that it was easy to shoot a bunch with light shotguns and bring them home for dinner. Jimmy's mom would prepare the squirrel just as she did the chicken and would bring to the dinner table platters of each - a dish of fried squirrel next to a wonderful dish of southern fried chicken. For me there was absolutely no choice and of course there always was the chance of biting into the pellet that did the squirrel in so I ate very little dark meat squirrel. Then we'd go to church, Southern Baptist, Methodist I've forgotten which, but just wonderful family kind of strong ties that kind of fit in with my family back home, strong sibling relationships so we got along just beautifully during the Army time. Separated and went on our own ways once we were all let go in February of 1962. We lost track of the two not so close and then after a few Christmas cards and maybe letters lost track of Ed Barton but I to this day send Christmas cards back and forth to Jimmy's mom who was the matriarch of the farming family that took such wonderful care and gave us such wonderful hospitality while we were there.

Frank - Was going into the service the first chance you had to really do some traveling?

Hovey - Yes, in fact I'd never been anywhere other than Providence, Rhode Island. I don't think I'd been out of the state at all. Well as a kid we might have gone to New Hampshire, let's say out of New England. As a kid I remember being taken to Lake Winnepesaukee. Mom and Dad being able to go with other families to a big cottage up there sharing the costs and enjoying the week up there. I have a cute little story up there. We'd all be sitting at a great big dinner table and a favorite dessert that the parents liked to have was ice cream, chocolate syrup with salted nuts, a kind of a homemade sundae and then it was the parents' trick to try to get the kids to look elsewhere and scoop out some of their sundae for themselves. The one I fell for and I can remember to this day Mom said, and we could look out onto Lake Winnepesaukee, "Look at the submarine". Half of my sundae vanished.

Frank - Ah me. Well when you finished up with your taking care for your friends and neighbors of the United States for a period, what happened upon discharge?

Hovey - My time at Court Square Press is when I, going back and forth, re-met Rose and we courted when I wasn't working in Boston and realized that we dearly loved each other. So we got real serious up

until I got drafted. She said I'll wait for you Hovey and kept me thinking of home, with her bi-weekly care packages, chocolate chip cookies, candy, and she also subscribed to the Boston Herald. Back in those days it was a kind of a book kind of form, but the Herald always had a wonderful sports section and even though I got it a couple of days after printing rolled up in a little tight package, I'd often read every word in it and pass it amongst my New England friends in the 52nd Ordnance Company, and of course they just devoured all the goodies she sent, so a portion of my heart was back home all the time. So I got out in February, 1962, and Court Square Press and the service made me realize that I've got to think seriously about furthering my education. And thinking back I realized that it would be nice if I could save up enough money so that I wouldn't have to worry about working at school and could devote all my time to studying.

Frank - You were telling me you better go back to school. So tell me about that.

Hovey - So I looked around the Rockland area and came up with two jobs where I could work during the day and then into the evening. Hanover, the next town to Rockland, had a building business called Wes-Pine Lumber Company that featured window units for local buildings, and even though I didn't get into much woodworking I was comfortable pounding nails, so I got a job during the day there constructing window units from pre-fab pieces, so it was just a matter of using either a staple gun or pounding carefully appropriately placed nails, putting in the sashes with the windows riding up on the carriers and things like that. This was a 7:30 to 4:30 job. And in the evenings I would drive to Hingham and be a busboy in the Hingham Red Coach Grill at that point, and did exceedingly well. It was a part of the Red Coach chain. They've since gone out of business, but there was one in Boston, a couple in New York City, and one in Hingham. Hyannis had one at the rotary years ago, did very very well for a time period. A church family friend was the manager of the Hyannis one. I worked there a summer in between one of my Brown years, so then after I came out of the Army utilizing that connection I was able to get a busboy job over at Hingham and again did exceedingly well. I have, not to brag, it has always been my ilk to give my employer a little bit above and beyond what's expected. From tips that waitresses got supposedly they'd give their busboys ten per cent of their tips. By busting my buns for my waitresses my tips were very, very good, plus the daily wage from Wes-Pine in Hanover I was able to make a decent week's salary and Rose took it from me. We weren't married yet but helped me bank it, store it away so that in 1963 I applied to UMASS Amherst and got accepted. We weren't married yet but I went to UMASS and became a Baker House counselor. That helped with finances. And I became a decent student.

Frank - Your wife was really part of your educational process, wasn't she?

Hovey - Yeah, she has been a guiding root and light and I cherish that part of her among other parts.

Frank - Isn't it always nice when you know you've made the right choice. But tell me UMASS Amherst. I had considered UMASS Amherst as a school and, of course, in those days I went up there and they had a dairy festival and they were making their own - what was it like when you went there, tell me a little bit about Amherst itself.

Hovey - It was sticksville compared to what I had experienced up until then. But it was just beginning the major construction of the new high-rise dorms on the upper hills of the campus area and then down around the ballfield was a newly constructed ballfield. The rec center, I've forgotten what they called it, where a lot of fraternities, sororities ate, but in any case it's where kids could collect and just meet and socialize. That had been newly done by the pond. But you wouldn't have to venture far away from the immediate campus when you got out to the beautiful farms and, surprisingly enough, the Connecticut Valley had shade tobacco that I had never seen in my life before I went to Florida. But the same process of growing where tobacco plants grow up with this mesh that allowed sunlight to come through but protected it from some of the elements right outside of the campus area. But again I formed friendships with another wonderful nucleus of people. That has been the history and we'll get into that when we get into WHOI, but being a floor counselor I got to know two or three other counselors and we bonded together and two of them became members of my wedding party, best man and ushers. All four of us were counselors and here's where my interest in organic chemistry flourished, along with zoology. I graduated cum laude, anyway I graduated very comfortably because, again, I didn't have to work, could

apply my memorization kind of study focus, did real well in grades, graduated in 1966 with a bachelor's in zoology and, because I did well in grades, I got accepted at Scripps Institution of Oceanography in the PhD program.

Frank - Let me interrupt for a second here. Up to this point you had described yourself basically as kind of an indifferent student, but you were an observer weren't you. I don't know how many young folk at UMASS Amherst were aware of the fact that there were shade tobacco fields not too far away and you know that kind of thing. So for you it was a case of, you know, yes or no out of this, you were always interested in what was going on around you, but you hadn't really focused yet up until a service experience, a good woman, kind of gave you a direction.

Hovey - Positively.

Frank - So tell me about going out to Scripps.

Hovey - Graduated from UMASS in 1966, but Rose and I got married in January, 1965, and Sheila was born June of 1966, a month or two before driving to California. Didn't have a penny. We had one automobile. I sold my car. Rose had a 1962 Dodge Dart, wonderful car, and we've always grown up you take care of something it'll stand by you in most cases. So August of 1966 piled a newborn babe and everything we owned into the car, with some Veteran's schooling support, struck out for Scripps with a graduate school stipend and drove to San Diego cross-country and, even though the Dart was a wonderful car it tended to heat up, so we ended up driving at night when it was cool and sleeping in motels during the day, but did it in about a week.

Frank - Was this a great experience?

Hovey. It was a fantastic experience. We tried to drive to the Grand Canyon and look at the Grand Canyon, but you had to do some climbing and we were very fearful of the car overheating, so got halfway up that and decided to turn around and continue on our way. Albuquerque struck us because I think we might have got to it at a point where, either dawn or dusk, when it seemed like the city was down in a big hole and you approached it from plateaus and there was this beautiful lit up city that struck us. We were a little bit apprehensive because we weren't moving from a sound secure base, little uncomfortable because of limited finances, striking out on our own. Neither Rose nor I had kind of freed ourselves totally from the family unit. I had gone away from home for the service and college and lived a little bit on my own, but there was always the support of the family behind us, so this was a big endeavor, a big chancy kind of thing for Rose and me. Although I think we grew from it and realized that with some hard work and effort we could secure a base and move from that.

Frank - So you got to Scripps

Hovey - Got to Scripps.

Frank - You know the first time I saw Scripps was in 1951 and I remember this kind of ramshackle group of buildings going down a hill dropping into the sea and absolutely nothing else around them but shrubs. What was it like when you got there?

Hovey - I think a few more buildings had been constructed. Was the big pier there when you

Frank - That was there.

Hovey - Okay, they had started building around that. I've seen that old picture where that, I'm trying to think what that lone building was with the pier going out, but they had I'm gonna guess Sverdrup Hall, PRL, I've forgotten what that, more physical oceanography kind of scientists worked in that building but I would say, the aquarium was already built when I got there. Let's say six or seven relatively newly constructed buildings around that lone brick building right on the edge of the cliff although it wasn't a great big cliff at that time. And then they were starting to march up the hill. The upper campuses were already

in construction and maybe partially being used. I can't, off the top of my head, remember the names, all part of the University of California system, and they were called something college here, something college there, but I think they're all part of the University system. So it was really beginning to expand when I got there in 1966.

Frank - Nowadays you can hardly afford to drive through the town, let alone go to school there.

Hovey - We lived in Del Mar, ten miles to the north, lovely little community, although we've gone back since. Rose and I have gone out there when I'd work on the WHOI ships, working in San Diego, taken a little side trip to go back to our Scripps stomping grounds so to speak and look at our home in Del Mar which we had a real difficult time recognizing because of how much that area has grown up. We had to really search for the road, let alone the house that we actually occupied when we were out there.

Frank - So you were going to study biology at Scripps. Were the Scripps big names there at the time, the Roger Revelles and people like that.

Hovey -Yes. Here I was going to an oceanographic institution so my biology interest sort of now moved over to marine biology with the obvious marine influence there. Yes, Dr. Roger Revelle was there. Scholander was there. Do you remember him?

Frank - Right, Walter Monk, was he there.

Hovey - He was there. I'm beginning to have a hard time with names but another couple of them. Dr. Neuman was a benthic ecologist, very nice gentleman that I somewhat got to know a little better than some of the other physical or chemical oceanographers, mainly because my background or my wishes were on the zoology biology side of things. Tom Scanland was a graduate student that worked for Dr. Neuman and we began a friendship that really developed while I was out there. He was an avid SCUBA diver. I learned to SCUBA dive out at Scripps and as it worked out it was a very important tool in my later work here.

Frank - Was Ron Church out there then?

Hovey - He was.

Frank - I have to laugh. Bob Dinsmore, whom you know well, described his Master's degree work at Scripps. When I said what kinds of courses did you take, he said well basically there were only four. You took one in each discipline. I said well who were your professors. He said well Johnson of Sverdrup, Johnson and Fleming, Francis Shepherd for marine geology, Roger Revelle for physical oceanography and Norris Rakestraw for his chemistry. And I said my heavens, those were the founding fathers of the field. So tell me a little bit about being a student at Scripps and

Hovey - Wonderful experience. I went out there to get my PhD, but lost my way a little bit, and I think it harkens back again to not learning how to think but rather memorization. There were some politics going on. My immediate supervisor was Nicholas Holland. He was brand new at the job and personally I felt that I didn't get the greatest guidance from him. It's time at this level of your education to start thinking of becoming independent, dreaming up your own approach to problems, designing ways to answer questions involved, going through the methods and coming up with data and then discussing and concluding from all of that. In my bachelor's years even though I associated with some graduate students I never grasped that approach. I was looking from Holland and others to be directed by them rather than me taking the lead and thinking up the problem, so I did an awful lot of SCUBA diving looking for maybe potential projects for my thesis. Got to learn how to work various sampling gear items, bottom grabs, netting, mid-water sample takers and things like that, but, because of the environment, anything that I could do by SCUBA diving was first priority for me.

Frank - Let me ask you a question at this point, and I have to preface it with giving you a little of my history on this. Very much like you, I was in a doctoral program, my dissertation was going to deal with

corals in the Red Sea, and then I got to a certain point in my life when I said, you know I really don't care two hoots about corals in the Red Sea, what I want to do is dive in the Red Sea on the coral vents. That was my real interest and I'm wondering if you were the same. Did you really want a PhD?

Hovey - I don't think so, Frank. I think it was more of what people expected of me rather than my seeing that as my aim. I did so well at UMASS my counselors and instructors there said go get your PhD, so without ever really sitting down with Rose and saying Rose what should I do with my future, I kind of listened to those people and Scripps accepted me. I think I also applied to University of Washington, URI, a couple of others, maybe Rosenstiel School down in Miami. Only two places accepted me. It was URI and Scripps, which was the WHOI of the west coast.

Frank - Who turned Bob Ballard down when he applied for graduate school.

Hovey - So, you picked up very nicely on that. I don't think I had the driving force behind my mind.

Frank - See I think this is a really important point, when you talk about what put someone in a particular field. Everyone seems to think that being in the oceanographic field you have to be a scientist. And then there are those who want to be in a marine environment and right now I could look at what the scientist is doing for the most part and say, my God, get a life. I wouldn't want to spend my life doing that very small directed kind of thing.

Hovey - And as it turns out nowadays dear scientists have to spend so much time in the office preparing proposals that they've been taken right out of what they really want to do. They want to get out and do the science but because of the difficulty in support it means writing over and over and getting rejected and then -

Frank - So how long did you stay out in that area?

Hovey - Okay, three years. Three marvelous years. We didn't see one snowflake out there, not that we didn't love snow, but those three years were special for me. A lot of it was my SCUBA diving experiences, but along with that being able to go to Ensenada, Mexico, and assist other graduate students in trying to find exotic reef fishes along the coast, to swimming off the Scripps dock, SCUBA diving and having a California gray whale move at the surface between us and shore. Tom Scanland's thesis was inhabitation on canyon walls and predation of the initial animals that would populate a particular part of the canyon.

Frank - So he was into the submarine canyon.

Hovey - Right, they came up so close to shore you could take a skiff out to 200 feet, 300 feet deep areas without having to go miles off shore. We never dove to that depth, although once or twice we'd go to 200 feet and you could stay at 200 feet for six minutes without having to decompress. So, once or twice we'd take an excursion down that deep, but the most of his work was putting asbestos plates that kind of mimicked the material that the canyon wall was made out of. He'd put a variety of sized screens over the plates once the plates got covered with the initial population of animals and then see what size animals would be predators on growing animals. Well there's a gorgeous, wonderful animal that inhabits that part of southern California and it's the torpedo ray, great big beautiful disked animal, very symmetrical tail that had electrical batteries in its disk. It's one animal that you don't want to mess with. To this day I can remember working with Tom on a little part that jutted out from the canyon wall where he had set some of his experiments. Here's my mask, and being conscious of a little bit of light, not that it was dark down there, but a little bit of light beyond the ambient light coming down and I turned my head and I'm looking at this great big white underside of one of these gorgeous torpedo rays and I think he just went up and just touched me a bit and asked me to get out of his way, which I was very tickled to do and he just fluttered on his way and we got back to our work. And the unbelievable kelp beds out there. Just incredible environments for a SCUBA diver, beautiful bright orange red Garibaldi fish that it's against the law to spear or take home for your aquarium. The juveniles are red with blue iridescent dots on them, very tantalizing to gather them up. So that whole environment and experience just had a lasting

impression on my mind. I was well prepared coming east after that, at least in that respect, hopefully to utilize that. Although I never thought of it in that way, it just worked out that I was able to use that tool.

Frank - Had you thought of staying on the west coast?

Hovey - It was a very inviting place. There was Disneyland at that time.

Frank - Almost seductive out there, you know.

Hovey - Yeah. And San Diego wasn't near as developed as it is nowadays. They had just built the football stadium, the AFL and NFL were beginning to butt heads and the wonderful San Diego Zoo. We would get family passes to that year round and you could go weekend after weekend and see new stuff, and to a two and three year old young daughter growing up it just flipped her out. Sea World was just beginning to grow, not near the size it is now, but it was a wonderful place, and anybody that had a liking for boating and sailing, although Rose and I were more swimming kinds of in-the-water focused rather than boating, it was all right there and it was a very tantalizing place, but then again we did have the Atlantic and the family roots back home. There was a particular step in your graduate stepping stone where you had to face a rather extended oral exam and, not to blame or explain away my shortcomings, not being able to think the way that was demanded of me at that time. You had a group of four or five professors that would ask questions around the table so it was a wise thing to focus your studies on the expertise of the particular professors there. Denis Fox was one of the group and he was a biochemist, marine biochemist, which I thoroughly enjoyed, like my undergraduate organic chemistry. Unfortunately his brother died the day before my exam and they substituted an algologist and he started asking me photosynthesis questions, things you know Frank that really to have a well-rounded education at this time of my career I should have been better prepared. I didn't have any marine botany background, hadn't studied any algal related subjects and I got flustered. There's been some major professors of graduate students who will see their graduate students floundering and say something like well you're not doing very well, let's stop for now and in a couple of weeks you bone up on some of these subjects that you're struggling with and we'll do this over again. Well, my guiding professor didn't have an inkling along those lines and I answered a couple of questions beautifully but floundered on enough of them that they met shortly after this oral exam and suggested that I go for a Master's rather than continuing on for a PhD. And the light began to show, you know did I really, did I need to stress myself, go on. I think I'd be very comfortable being the best marine technician that I could be. Did I want to go through this gut-wrenching, heart-wrenching experience again, and Rose and I sat down that evening and said let's go for the Master's and see what we can do back home. So that's how that went.

Frank - It brings up something that I'm interested in. Were you the first person in your family to go to college?

Hovey - Yes.

Frank - I was too, and as great as our parents were, both yours and mine, because they didn't have that background it was really hard to sort of develop in their children how you proceed along this, because they didn't know. You were the first toe in the water kind of thing. It's interesting, cause it may have been very different for you if you had come from a long line of academic people, if you will. So you went through all that and you decided, okay it's time to come back to the cold Atlantic and see what's going to happen there.

Hovey - Now let's see if I've missed anything. Okay I've touched on the canyon close to shore, the kelp beds. Oh I gotta tell you about spearfishing. My greatest fish story ever. I bought a commercial pole spear which was nothing more than one inch in diameter and an eight foot long dowel with a small five-tined spearhead attached. On the other end was a rubber tubing sling that you would clasp and stretch to shoot your pole spear.

Frank - A lion sling

Hovey - Yes sir. Well *Paralichthys* is a beautiful halibut flatfish that would come close to shore and breed in the spring so we were always looking for this, small male but gigantic females. We went out fishing one day, spearfishing, and there was one right at the canyon edge, maybe in about forty feet of water, so I slowly, and this was a commercially made piece of gear, approached him like we were taught, snuck up on him tail first, got right above him, had the pole spear, let it go and the five-tined spearhead hit him right in the head where you're supposed to and, because of the weak bungee, it just bounced off his head, bounced up at me, the fish got up and swam off, hardly fazed by this great hunter. A couple of months later or the next year the flatfishes returned. This time I was prepared, a homemade tri-spined tip with husky enough bungee and snuck up on another one. I looked at his head, didn't see any markings there, so it wasn't the same one, and was able to drill him. Then you bury the spear in the mud so that he cannot get up off the ground, swim down and then eventually work your goody bag around him. Rose has a picture of me at home in the kitchen, got my fingers through his gills, holding onto my belt and his tail bent on the floor. This wonderful flatfish that gave us poor family fish steaks for many meals. Never been much of a fisherman in my whole life with rod and reel but spearfishing -

Frank - I never could get into the rod and reel but I always loved the spearfishing. That to me was hunting.

Hovey - Okay, so

Frank - Let's see where we are here. I think we're probably almost to the end of this tape now. We've got a hundred and ninety-six feet on the second side.

Hovey - Okay knowing that I was going to come back home and I was going to graduate in June, 1969, with my Master's Rose's Mum and Dad paid for us to fly home with Sheila Christmas of 1968, so sort of knowing my immediate future Rose and I were wondering what I might do after graduation. We were vaguely aware of this oceanographic institution down on the Cape. We had in our courting years driven often to Provincetown and Craigville Beach in Hyannis but had never made the turn off the bridge to Route 28 down to Falmouth. So, unfamiliar with the area, I had seen over the years brochures about Woods Hole Oceanographic. So we were home that Christmas of 1968, I called up the Oceanographic and got Bruce Crawford. Bruce Crawford was the Personnel Director of WHOI at that time, a two-person operation then, Bruce Crawford and Mary McGilvray, who is Susan Casso's Mom. She was secretary or executive assistant to Bruce at that time. Got Bruce and he said, well, I haven't got any openings but come on down and I'll show you around. So Rose and I drove to Woods Hole while Sheila stayed home with Grama and Grampa. It was a beautiful day, I found Bruce and he was in a trailer right outside the stockroom door where the stockroom is now down there in Smith parking lot. All he had was a trailer, a tow-able trailer where he had his office. That was the Personnel Department then. Met him, a wonderful, charming person. Mrs. McGilvray was a lovely lady and we filled out the appropriate employment forms and he said well you know Stan Watson said he might have an opening. Why don't you go over and talk to Stanley. So I went over to Redfield. Stanley said, "Hovey when you graduate in June come see me because of your electron microscopy experience as part of your Master's thesis I could use you in my electron microscopy area." Well if I didn't flutter away. So I had a future at the wonderful oceanographic institution on the Atlantic. You Scripps people if you don't want me, heck with you. Wait a minute I keep forgetting that this is being recorded. No, I have no ill will. So I wrote out what I thought was a wonderful Master's thesis on *Molpedia aerenicola*. It was a burrowing nearshore sea cucumber that SCUBAing you can see the furrow in the sediment where it's plowing along but it doesn't get down more than a couple of inches below the sediment surface. Its coelomic fluid, internal fluid, has what they call coelomocytes, a cell that has a kind of hemoglobin in it so when you plunge your syringe into its internal spaces you extract red blood but you can't use the word "blood" because they are not nucleated cells with actual hemoglobin that we have in our cells, so they call it coelomic fluid and coelomocytes. It had already been discovered but never worked up, so my Master's thesis was doing a little physiology and describing the cell and describing the associated other kinds of cells that would go around and bathe the internal organs of this animal. I had done some electron microscopy of these cells by embedding them into hard plastic, slicing them and prepping them for the electron microscope that would expose the characteristics of the coelomocytes. So Stanley saw that and invited me to come work at WHOI July of 1969. So July 7, 1969, I walked into Stanley's lab and my WHOI career began.

Frank - What was your emotion when you got the job? I mean you certainly knew Scripps. Because you told me you had applied to University of Washington, URI, University of Miami Rosenstiel School, so you certainly knew the academic oceanographic community and now you're at a really up and coming place, how did you feel?

Hovey - Tickled beyond my imagination. Throughout my WHOI career I have been most impressed with the familyness of the groups that I have associated with and bingo that first meeting with Stanley and then subsequent associations with his workers and him started this most wonderful beginning of group associations. Family, that's the best word I can use and it prevailed for me throughout my thirty years here from one group to the other. There's bad apples all over, but ninety-nine per cent of the people here and individual groups, are just warm, wonderful, thoughtful, caring people and I think of myself as being that kind of a person. It was a natural coming together. The first Sunday that we were here, Stanley invited us over to his home, he and Margaret, and had cocktails Sunday afternoon, invited Rose, Sheila and me there at his home out in Sippewissett and he said he's going to have Werner Deuser and his wife and two little girls there also. We spent the afternoon there, the kids played and it was just the beginning of this warm wonderful fuzzy drawing to Stanley and it just blossomed when I went to work the next week meeting Freddie Valois, Linda Graham, Tony Remsen, Brian Schroeder, wonderful people and we fell into the Stan Watson family. Coffee breaks we would just socialize for thirty minutes. Lunches together. Linda and Freddie were avid daysailors. Both families had sailboats so once or twice every summer the whole lab would pile onto the two sailboats. We'd sail down to Tarpaulin Cove and have a picnic. I'd bring the volleyball set and we'd have just wonderful times together. Linda was married at that time to Dave Graham who was a marine specimen collector for MBL and ran one of their two small collecting boats at the time. So there was an immediate connection with the good folk over in the collecting department at MBL. To just expand a little bit beyond the immediate Stanley Watson area, WHOI had pickup trucks that we could use after hours if you needed to truck some family stuff from one home to the other or use it around the yard. They had skiffs at the fingerpiers next to Smith where if you wanted to have a picnic over at Hadley's Harbor after hours or weekends pile the family in there if you're comfortable with tooting over there, toot over there. Rose and I had on the very first weekend that we tried to boat over to Hadley's a hard time starting the outboard motor. Dick Edwards and Cliff Winget happened to be in the parking lot at the time, total strangers to me. I didn't know them from Adam, came over, introduced themselves, "can we help you." Turn this button here like this, now pull the chain - vroooooom. That kind of stuff and it was just beginning, Frank, it was just beginning. So you know I wasn't here more than a couple of weeks when I realized I had found a home and \$7,200 was my annual pay those first years here. But like the pay, everything else was not quite as expensive and we lived for a couple of years up behind WHOI on Carrot Hill Road by the golf course which comes down onto Harbor Hill that is sort of the northeast side of the immediate village. We lived there for a couple of years and then with Rose's family's help with finances we were able to purchase or get a mortgage on our home that we've been living in ever since around 1973 right in the middle of Falmouth.

Frank - This must have been an incredibly exciting time for you. You get out of the service, you got married, you had a child, you took the first significant trip on your own, not being sent by the Army or anything like that, you made a career decision at one of the world's most famous oceanographic institutions, and then came back to work at another one of the world's most famous institutions, that must have been a real exciting time.

Hovey - And the stress factor or the concern factor of not having permanent employment, although I put the "permanent" in quotes, being able to have a job where I could support a family.

Frank - This was a career choice. This wasn't a job.

Hovey - That's right. Things were heaven.

Frank - Okay do you want to stop at this point today?

Hovey - Sure.

Frank - The last time we got together we talked about your personal history and your educational background and all this sort of thing and it led us right up to the point where you came to WHOI and you started to get into that a little bit. But I think I'd kind of like to start fresh. So tell me about how you found out about a job, who did you talk to, how you got here.

Hovey - Thanks Frank, maybe going back a little bit when I saw the end of my Scripps career, not that I wouldn't have liked to have stayed there but because of strong family roots back in Massachusetts, both Rose and I realized that as wonderful as southern California was it wasn't a place where we wanted to stay for a long period of time. So I knew I was going to get my Master's in June of 1969 from Scripps. That previous Christmas season, late 1968, we were able to fly home and enjoy Christmas vacation with our families. Knowing that my college university career probably for sure was going to end in June, it was time to get serious and look for permanent employment and we were aware of an oceanographic institution in Massachusetts called the Woods Hole Oceanographic Institution. So during that week we gave a call down to WHOI and got Bruce Crawford who was the personnel director at that time and he invited Rose and me down for a little talk about the Oceanographic, and although he didn't have an opening at that time he thought it would be worthwhile to come down and fill out the appropriate applications, which we did. On arrival during that week after talking to him for a little bit he knew that Stan Watson over in the Biology Department had an opening in the near future so he said why don't you go over and talk to Stanley. I did do that and Stan, after having a short thirty minute chit chat with Stan, because of my electron microscopy experience writing up my Master's thesis he saw an opening or a use for me in his group because he was doing an awful lot of electron microscopic work on his nitrifying bacteria, which just tickled me no end. I went back to Scripps for the last six months and headed back home late June of 1969, packed up family, et al and put everything in our 1962 Dodge Dart and struck out for Massachusetts, arriving early in July. Went immediately to see Stanley and we got a rental over in Quissett, a little teeny apartment for the summer of 1969 and I began working for Stanley on the 7th of July, 1969.

Frank - Let me ask you a question before we go any further. What was the, now we're talking thirty or forty years ago, what was the state of the facilities in the Institution back then, I mean was Redfield here and those buildings?

Hovey - As I remember it the village campus was pretty much the way we see it now, Redfield I think, Swift House was utilized by WHOI, I think the Blake Building was receiving and shipping at the time. Meteor House, I think, was occupied by the Director. I think they lived there back in those days. I'm not sure of that. Dr. Paul Fye was the Director when I came. But the whole place was quite new to me. Iselin Dock facility as we see it now had been finished in 1967, 1968, so Bigelow, Smith were integral parts of that space, Paul's Mall was in place, the green, I remember that, and I think Challenger, Crowell House, pretty confident that they were WHOI, so we were extended up to the Challenger Drive, up to Meteor, Blake, we had the lower parking lot, School Street parking lot. I can remember parking there on occasion so that was what WHOI was to me at that time. The GOSNOLD, the CHAIN, A II were our principal vessels when I came. Maybe some of the smaller ones were still around but I don't remember, certainly I didn't go on any cruises on any of the others other than those. So, I started working with Stanley on the 7th of July and one of the striking most meaningful heartwarming features that I learned about WHOI was it struck me immediately with Stanley and his group was the hospitality, the friendliness, the warmth of, and I saw it in other groups around the Oceanographic, but because I became a member of his group, how wonderfully enduring the partnership of his group immediately struck me.

Frank - Tell me a little bit about that. What was he like himself. What kind of man was he? And what was his primary interest?

Hovey - His big bag was studying nitrifying bacteria and they were bacteria in the marine environment that took a nitrogen molecule and converted it to another type of nitrogenous or nitrogen molecule, I think they're called nitrifying bacteria and they might have taken nitrite which is NO_2 and converted it to nitrate NO_3 . My chemistry is a little weak in that but anyway the bacterium would get energy out of that transformation so it could build its cellular structure. He was very much interested not only in that process

and the chemistry involved but also the particular characteristics of the shape and form and the sub-cellular structure of the bacterium and he saw particular aspects in cell walls that I think if I remember correctly were unique to those kinds of bacteria. So not only did he study the chemistry going on in the marine environment but also what the organisms actually looked like. So, although I came there to become an electron microscopist, Brian Schroeder, a wonderful WHOI employee over the years had come in between that period of late 1968 to mid-1969 and he had an electron microscope background. And evidently Stanley had some needs at the time before I got there so Brian sort of stepped in to that position that I was going to get, but his lab was sort of expanding and there was plenty of other work that fit right into, in particular maintaining cultures of these organisms. What we'd try to do is get a beginning organism, one specie, if that's the right term, and try to grow them up into great numbers so that when you filtered out all the organisms you had a great big collection of one kind of organism whereby you'd prepare them for an electron microscopic investigation and you would have all the same organisms. You had a very good chance that every picture you took was of the same kind of an organism. So we had three or four types of nitrifiers that he would try to grow up and study. There was an awful lot of lab work that needed to be done to culture these organisms and get them in shape so that he could follow up on doing the kinds of things that he liked to do. He was a fun loving warm individual. He had wonderful people around him, in particular Freddie Valois, Linda Graham, Rick Olmsted. John Waterbury had just gotten out of college, had worked in Stan's lab for his college year summers and now was preparing to go on to graduate school. Tony Remsen was another one of Stanley's group. I was immediately taken by the caring of the group. We would share coffee breaks, wouldn't be just you go get a cup of coffee and go off in your own little corner and go about your business. We'd all get together and enjoy thirty minutes together, maybe twenty minutes of it talking science and ten minutes talking gossip. And we'd share lunches together. He'd make sure that we went to biology seminars together. Numerous summer picnics together and the very first Sunday that I arrived in Woods Hole my family was invited to an afternoon tea with Stanley and Margaret, his wife.. They had another family there, dear friends Werner Deuser and his wife and their two girls sharing tea and it just came across how warm and wonderful this work unit was, and it's funny it wasn't a week or two or three weeks into my WHOI career that I learned about other warm individuals at the Oceanographic and, in particular, what sticks in my mind is we had the availability of pick-up trucks for off hours personal use. The Institution had skiffs and outboard motors for off hours use if you wanted to and I can remember hearing about Hadley's Harbor, what a wonderful place that would be to visit, so warming up to the Oceanographic and learning about its particular fringe benefits, Rose, Sheila and I decided to have a picnic over in Hadley's Harbor. A little naive about maybe the conditions getting through the hole but I remember it was a pretty calm day it seemed like. Well we piled into the skiff and I had had a little outboard motor experience, but I'd be dog-gonned if I could get that outboard motor to start, cranked on that thing for what seemed like a long time when two WHOI employees, in particular Dick Edwards and Cliff Winget, happened to be in the Smith parking lot, don't recall what they were doing. But I hadn't cranked on that motor for too long when they came over and introduced themselves, happy to see the Cliffords as a new WHOI family and either Cliff or Dick said "why don't you turn that not quite so far, give it two cranks, then turn it back". That was all the help we needed from two helpful people.

Frank - It must have been a real exciting time for you then. You were coming into a field that you had studied for, you were at a world famous institution and you were being welcomed.

Hovey - Exactly. Another early summer of 1969 experience was the Oceanographic had a wine and cheese tasting party at the MBL Club. Now the Oceanographic was pretty small but MBL wasn't all that big so it was an evening get together, maybe a Friday or Saturday evening and I don't even remember paying anything, but here's the hospitality friendly environment. Rose and I had a delightful time tasting cheese and to this day I can see Cliff Winget in a red outfit as a bartender and being extremely hospitable.

Frank - Now would the Director and Associate Directors take part in these kinds of things too.

Hovey - I think so. I don't remember in the early years situations where I bumped into Dr. Fye much but I was learning. I didn't know quite the limits and our paths didn't cross that much in the early days. I certainly went to talks that he gave on the health of the Institution because I think it was soon after I

arrived that WHOI was thinking of really expanding and it was the early to mid-'70's when they were building the upper campus, Clark campus, because I can remember going up there with the next person I worked for after Stanley, Gil Rowe, and sizing up the laboratories to see if we, members of the Biology Department, would move up there or stay in Redfield, which at that time was the home of both chemists and biologists.

Frank - Now how long did you stay in Stan's group?

Hovey - I'm thinking from about from 1969 to 1972ish.

Frank - And what would a day be like for you?

Hovey - I'd come in and because I lived right on Carrot Hill (after the summer of 1969, we were able to rent a home up on Carrot Hill Road next to the golf course), I walked back and forth to work, just cut down behind Blake, down by the School Street parking lot and just walk the paths between homes onto Harbor Hill Road and on up to Carrot Hill which I 'm talking fifty yards. Carrot Hill is rather a small distance, so very easy. And the Woods Hole Child Center was right next to our home and it was a perfect place for our daughter Sheila, 3, 4 years old to go to morning school. It was a wonderful couple of years. So I was an early riser getting to work at 7:00 a.m. was exceedingly easy for me, open up the lab, the cultures had to be checked. We could put coloring dyes in them and these were culture vats this big, let's say four feet tall, a foot in diameter, closed systems because we didn't want them to get contaminated by any external organism because we wanted to keep one kind of bug in each culture. And the dyes would turn color if the culture got contaminated. There was a by-product of respiration or growth in other kinds of non-nitrifying bacteria that would turn the dye from a red to an orange, so you would immediately know that this culture had somehow gotten contaminated, because you had to drip in nutrients, you had to take out waste to keep it uniform, so there was a whole series of sub-sampling processes that had to be done to make sure everything was working well. If we had a culture that had to be prepared for the electron microscopy work there was a whole series of processes where you'd take out a real concentrated sample, filter it down, fix it with gluteraldehyde and osmium embedded in a plastic matrix that could take slicing with a very sharp razor blade a real thin sample so that the electrons could get fired through it and you'd see the image of your organism. So there's a whole time-consuming process that had to be taken to get the sample in an ultimate position where Stanley and Tony, who was an Assistant Scientist in Stanley's group that was sort of the top of the pyramid, that made the decisions and wrote the proposals and wrote the papers and things like that; whereas, Freddie, Linda, Brian and I were the techs that prepared all the stuff for Stanley and Tony. I went on my first scientific cruises of my WHOI life for Stanley and Tony so there was a real beginning then. My first cruise was on the GOSNOLD with Brian and Tony. We met the GOSNOLD in New Orleans and took the ship out into the Gulf of Mexico, sampled the end of the Mississippi River and then took a number of samples out in the Gulf and the cruise ended up in Galveston, Texas.

Frank - Now I'm curious, first of all were you excited when you found out you were going to go to sea?

Hovey - Positively. It was an environmental experience that I had had very limited experience with. In fact the only ship that I had ever been on was a destroyer. When I went to Brown I was in the NROTC and during the third year, junior year, third year of your five year commitment to the NROTC, typically the Easter vacation week was spent off Block Island on destroyers or any available naval ship that was in I think Newport, Rhode Island, so we drove down from Providence, got on the ship. To introduce recruits to Navy life the different students would be paired up with crew members to learn how they behaved, worked on ships. Well my partner was a quartermaster who spent most of his time up on the bridge, and I can remember being deathly seasick because we boarded the ship in Newport and steamed out of Providence Harbor and headed out into Long Island Sound heading for Block Island. We ran into big swells and there I was up high first time in my life, it wasn't so much the rocking, it was the up and down motion that kills. Well I lasted about thirty minutes when I headed for the bunk and saltine crackers. I learned from that experience, and so that was the extent of sea life for Hovey until my first cruise at WHOI and I'm pretty sure it was on the GOSNOLD with Tony and Brian.

Frank - Now were you afraid of being seasick?

Hovey - It was in the back of your mind. Because I was a rookie I wanted to impress Stan and his group with being the very best technician I could possibly be, so I wanted to do well and I did do very well. I'm proud of my time through the years at WHOI of being what I perceived as being an exceedingly good technician. Whatever came my way I tried to excel and do my best for my boss.

Frank - I was just going to ask, so you get down to the Gulf of Mexico and you were taking samples you said off the Mississippi River, the Delta, was he interested in fertilizers in the water and things like this?

Hovey - No he, if I recall correctly, Tony had more of a chemistry interest in the whole nitrifying question. Stanley was interested in the morphology, the structure of the organisms.

Frank - It was right at that period when they were making the change from that kind of observational biology to the more physical science oriented.

Hovey - So it was a sampling process using Niskin bottles to catch water which was Tony's main interest. The Niskin company had also developed a sampler to obtain water for microbiology research. The sampler consisted of two plates about a foot square connected on one side by a hinge similar to the front and back covers of a book. A sterile plastic bag was placed over the two plates so that when activated a large spring separated the plates which in turn would draw water into the sterile bag. To get a sample we would hang our samplers on a hydrowire and send it down to a preferred depth. Once there a messenger would be sent down the wire and when it impacted the sampler a blade would cut open the entrance hose and at the same time activate the spring to spread the plates. When the two leaves of the sampler reached a certain point a spring-loaded clamp would shut the hose tight, close it up so that in passing back up the water column no other water could enter, you had a preserved sample at the depth that you wished to sample. You could hang multiple samplers as you could Niskin bottles on the wire with a messenger dangling beneath each sample so that when you sent a messenger from the ship as you do with multiple Niskin bottles a messenger slides down, closes a sampler at the same time releasing a messenger to trip the next sampler down the wire. You could get discreet samples down a water column.

Frank - You make this sound like a really simple process. I don't think, however, on your first cruise they gave you an armload of stuff and said "Hovey, get this over the side, bring it back". How'd they train you for this?

Hovey - Well, I think it was probably a little bit of experience that Brian and Tony had had in their oceanographic beginnings so to speak. I didn't see any of this working in my Scripps experience. We didn't go out on any cruises in the years at Scripps, large ship cruises. We went out on small boats SCUBA diving to catch horned sharks and do work pertinent to underwater projects that the students had, but there was in my three years out at Scripps no students going on oceanographic vessels to learn techniques and such. So I came to WHOI a little weak in technical expertise. I learned on the job and it didn't take many casts before you got the hang of how you attached Niskin bottles and Niskin baggies. And that was the primary sampling mode for Stanley's group and you did so many of them you learned quite quickly how to do it and do it right. So the Mississippi, there's a few miles of Mississippi River left below New Orleans, extremely calm, the River flowed nicely and it wasn't a particularly sunny beautiful day, cloudy but not windy. So we started out, worked the lower end of the River and then got out into the Gulf and ran into a totally different environment, dodging capped oil rigs and the weather turned poorly, so the first day or two we all, Captain Harry Seifert was the skipper of the GOSNOLD at that time and he had to dodge enough structures in the area where we wanted to work, plus getting pushed around quite a bit that he just battened down the hatches, told us to hit the sack, and we kind of rode the storm out for I would say the first couple of days of the Gulf part of the cruise.

Frank - Stomach stayed level during this period?

Hovey - Yeah, and that's the way it's been for all of my Oceanographic career. Beginning a cruise if you have half a day to a day to get to your first station, you gain your sea legs. It's the cruises that you must take a sample an hour or two after you leave port, whether it's just cruising out of WHOI down the sound go out a couple of miles and that's your first station that's dangerous if it's rough out there. But any other cruise where you've got a time period to get out on the deck, fresh air, find the point of least motion on the ship, it was sort of in the center, and again fresh air, saltines worked for me every time. And you gained your sea legs in a half a day. Then come hell or high water most of us could deal with bad weather and perform admirably on the rest of the cruise.

Frank - Most people have the idea that a scientific cruise is something like they've seen on Jacques Cousteau or something like this, and we both know that it's an extremely work-intensive kind of thing, so I'd like you to take some time and describe dealing with woozies and all that kind of stuff that happens at sea, what kind of sea conditions say you can't deploy today or you can't recover, all that sort of stuff, food on board, opportunities for showers. Give us a whole day.

Hovey - Okay. The way I remember the early cruises - the great need to work the ship twenty-four hours a day came a little bit later in my career. The way I remember it, unless there were people there who wanted to do night work, we worked pretty much a sunrise to sunset day - into the evening so you got a good night's sleep, but you're right even then you had to get the most value for your buck, the most reward out of your cruise dollar. You got in as many casts, if that was your scientific mode, as you possibly could. I've forgotten exactly how we processed on ship all of the samples that we took from Niskin bottles and Niskin baggies. We may have had on board a culture box where you could maintain temperature and shaking conditions, so I'm thinking that in those early days we would sub-sample the baggies that we were trying to culture organisms from and put them in a series of Erlenmeyer flasks, add some nutrients in them for the animals to grow on, cap them, put them in a stable shaking system because you wanted them not to settle out on the bottom. They came from a moving environment so we would have shakers in a controlled temperature box. The water from the Niskin bottles probably needed a whole series of titrations for the chemistry. On-the-spot chemistry and maybe sub-sampling those Niskin bottles for future work back at home. Like salinity samples where you'd have boxes and boxes of samples to bring home to measure the salinity, Tony would have a multitude of bottles that he'd bring back preserved to hold the particular species of chemicals that he's interested in as you find them in the environment but there were other sub-samples that could last over a time period and you could bring them back and work them up at home. The GOSNOLD had a small laboratory where you could set up your different titration schemes or store salinity boxes if that's what you had to do to measure salinities on board.

Frank - Doing titrations at sea must have been kind of tough.

Hovey - It sure was. Sometimes not necessarily for Stanley's group but later on for Gilbert's group where you were interested in the critters immediately that you sampled so you put them under a dissecting microscope on the rocking ship. Quite a challenge because it was hard to pinpoint the particular organism you really wanted to work on. All you saw was water slosh back and forth - for some of the people who had not gained their sea legs at the time this did not help at all. Even though we did a lot of sample taking, we never missed a meal. One of the wonderful things about going to sea, and to the Port Office's credit, I never went on a cruise where there was a poor steward. Wonderful meals and for small vessels, small numbers of people the cooks could use their fantastic expertise because you didn't have to cook tons of potatoes or ten roasts or whatever. A cook could really put some effort and design into your particular meals, and one of the most pleasant features of going to sea is getting those three squares. And not only that, lots of times if you did, indeed, work late at night there was always a refrigerator full of leftovers that you could heat up and the makings of anything you wanted to have say at nine or ten at night, or even if you got up at three in the morning and needed a snack the refrigerator was always full. The stewards and cooks always had a refrigerator or a freezer that was under lock and key because they had stores that they had planned for future meals and we could not sample those, but there were plenty of items to really take care of any hunger pangs that might develop.

Frank - Now when you were at chow, this was basically one of your few breaks during the course of the day. Generally speaking what kind of conversations went on, were they aside from the science or did they dwell on the science or was there a lot of humor?

Hovey - It was a combination of all of that in my experience. If there was a particular problem with the science, that was discussed to a great degree. Again you had a limited amount of time and you always at least in my experience, you wanted to utilize every moment you could, so if you had to work out bugs you devoted a lot of conversation or maybe you had to redesign your experiment because of situations that arose once you got there. I can remember packing for cruises. You couldn't bring a stockroom to sea. You depended on the ship to help you out a little bit if you didn't bring a replacement or you busted a bolt of a certain length and you needed to replace it. You always tried to anticipate problems so you'd bring a lot more of your components particular to your piece of gear than you'd think you'd need just to cover yourself just in case something went wrong. But back in those days we could consume alcohol aboard WHOI ships so tongues got loosened up quite often and we would gossip a lot if we didn't have to talk about science, and my experience was that an awful lot of WHOI employees enjoyed athletics so the Boston sports teams were always the subject of conversation, and lots of time the crew members would play card games, so it was fun to watch them play hearts, bridge and things like that.

Frank - So there was a pretty good relationship between the science staff and the ship's crew?

Hovey - The best. During meals, once the crew members who were standing watches were eating, all remaining seats were open to crew and science. The ATLANTIS and A II had segregated messes. Crew forward of the galley. But that didn't mean you had to stay separated. If you wanted to go up and have the meal with the crew members that was fine. GOSNOLD, CHAIN, KNORR, new ATLANTIS, OCEANUS, everybody mingled in one mess. So there was great camaraderie between crew members and scientists, even non-WHOI scientists, because you had to face the elements together so the bonding and wonderful relationships and friendliness developed when you had to get out your oilskins and suffer the elements together. Most of the winches controls were exposed to the elements. Crew weren't in little cubbyholes all cuddly warm and everything while science was out in the elements. Most of them were exposed. They were suffering through the same agonizing moments and periods that you did. So there were very few - I might be able to count on one hand - bad apples in all of my ocean-going cruises that I can recall. Once in a great while alcohol was a problem. A crew member would come to run a winch and had difficulty operating the winch. There was a strange engineer on one of our biology cruises across the Atlantic, the Canaries, where later on it was found that he had stored hammers and large mallets in a lifeboat. Sometimes nobody knew where he was, and he would hide underneath the cover of the lifeboat. I've forgotten the particulars, but when we were going from Las Palmas of the Canaries to Madeira, when we got to Madeira he was let go and sent on home. But, you know, other than those two examples - oh well, there are many funny, humorous experiences. In particular one stuck in my mind. In fact I talked to Jerry Cotter just yesterday when we had our retirement group luncheon and for some reason a day worker of Jerry Cotter's deck crew on the KNORR had enjoyed a few rums before an evening cast. The KNORR had an aft crane that utilized trawl cable that came from a big winch below decks, came up through the core of the crane pedestal, then was ushered out through the boom and then down to your equipment so that you could utilize the benefits of a crane to pick up the gear and put it anywhere on the deck to work your samples. When it came time for the deployment and retrieval you could pick it up, extend the boom out over the side of the ship, pay out your cable from the winch underneath the deck to deploy your item. Once your gear was over the side the boom would be set in a crotch to give it stability. The boom would nestle in the crotch so any weight problems that your gear might develop - say you were casting in 5,000 meters of water the weight of 5,000 meters of half inch cable plus your gear demanded that you support your crane and boom. Then you haul it all back in again, bring your sampler through the interface and then you've got the crane to pick it up and deposit it anywhere on the deck convenient for you to work up your sample. Well, Cotter was perhaps the best boatswain on all of the WHOI ships (we've had some good ones) but he ran the KNORR under Captain Hiller. They had a wonderful working relationship. They conversed well. Hiller took the ship wherever science wanted to go, but when it came to working the deck for science or for the ship Cotter was the boss. He was superb. So there was a series of hand signals that the boatswain would go through to direct the crane operator in deploying and retrieving scientific gear. The scientists would - they could do it but not nearly as well as Cotter - and

Jerry had such a firm hand in operating everything on the deck of the ship, he wouldn't hesitate for a minute to be called up at 9:00 in the evening if that's the time that we had to deploy our gear. Now we're getting into the time later on in my WHOI career when you worked the ship twenty-four hours a day to get all the greatest bang out of your dollar. Money was tighter and tighter, tougher and tougher to get. So at 9:00 o'clock in the evening Jerry's trying to direct with hand signals watching the gear and he gave the particular sign to hoist the box corer off the deck of the ship. A number of us were holding on to the corer to steady it as it went over the side and the corer didn't budge. We looked to Jerry to see why the corer wasn't moving. So he exaggerated the particular hand signals and it still didn't move. We looked up and there's the crane operator in his little box, slumped over the controls. So in order to get the operator's attention Jerry had to climb up a ladder, so Jerry tells us all to stand firm. He climbs up the ladder, knocks on the window and waits for George (George was his name I cannot think of his last name, he was a wonderful deck man but on occasion he would enjoy some rum and it affected his abilities to perform to the degree that we expected of him). So Jerry climbed down after he woke George up. Jerry made sure we were all ready to help again. We were all ready to go, Jerry looks at the corer and gives the same hand signal again and it doesn't budge again, looks up again, there's George resting his head on the controls. So Jerry climbed up again, knocked on the door and with hand signals made it very clear that George was to leave that position and go to bed. Jerry got another deck hand and everything went smoothly after that.

Frank - You know you bring up a whole lot of things that I'd like to talk about here. First of all, did you guys ever play tricks on each other at sea to kind of keep your sanity?

Hovey - Little bit and a favorite one I'm sure you may have heard many times is writing a letter because tomorrow we're going to go by the mail buoy. And that occurred almost every single cruise if you had a novice, a new technician or a student. It was a wonderful trick on students. I recall an experience when I worked for Cheryl Ann Butman when we utilized the Harbor Branch ships that had submersibles on them and worked down off of St. Croix, St. Thomas, wonderful set of cruises.

Frank - Links organization

Hovey - Yes. I dove many times on the ALVIN but on the ALVIN you've got viewports about the size of a SCUBA mask to look through on the lower part of the sphere. You had to enjoy the environment looking out on the bottom of the ocean with your feet in your partner's face looking out his viewport and his feet under your nose looking out your side. The two submersibles that Harbor Branch had you were in acrylic bubbles. Granted you couldn't go near as deeply as the ALVIN could go, but to be able to see so much more and in all directions was just a heavenly experience. Part of Cheryl Ann's work was to take small box cores of the bottom. They had spring-loaded shutting valves. You just twisted the handle. It allowed the springs, once you pushed it into the bottom, to close the jaws underneath. The sub would pick up the sample that you had taken, put it in your basket. You'd haul it back and process it on deck. On this particular cruise we had a bunch of students that we wanted to break in and one of the scientists brought some old fake coins. And the way we processed the samples was you'd empty your box of sediment out into a series of sieves with a variety of mesh sizes so that the top sieve would take out the big pieces and get down to real fine collection in the bottom sieve. So we'd have five or six of these sample boxes and they were subdivided up too so you'd have plenty of samples to process. We processed the samples on a big sieve table where you'd have seawater and hoses available to wash the mud out of your sample. And one particular scientist of the group would dole out the samples that had to be sieved. He buried a couple of the old coins in one of the mud samples. When a student discovered one of the coins she lit up like a light bulb. She had found this treasure and went running to the chief scientist because she wanted to make sure that we recorded where the sample was being taken because she wanted to, hopefully, send us back to resample that particular area. To this day I don't think they ever told her. We couldn't return to that site. I'm sure she has wonderful memories of maybe finding part of a treasure.

Frank - Somewhere out there are millions of them if I could only find it again.

Hovey - Right.

Frank - That's great. So that's one of the ways of keeping sanity on board, because it's I mean you're in a very small environment and a very enclosed environment and you see nothing off to the side except more water and so you build a different kind of community and it's really interesting that you talked about the early days on the CRAWFORD where everybody was kind of thrown into the same pot, everybody, crew and scientific staff would eat together, then as the ships got a little bit bigger, funding got a little bit more difficult you started to see a little bit of segregation. Crew had their own, scientists had their own. Is that a trend that you see continuing on now. Is there anything that concerns you about that? It's a hard question.

Hovey - Right. In the early days you entertained yourself if you had the time with pocketbooks. And the library on board ship, maybe small ones, was stocked with as many novels and even research books as you could possibly stuff in there. So spare time, unless you brought a little hobby with you, was spent reading books. Then I remember TV's coming and VCRs. Although in the early days we had movie projectors so one or two nights a week ships would have full length features for the crew members and science and enjoy movies two nights a week. And then the VDs came out and anybody who had some spare time could pick out a VCR tape, put it in, play it, and crew members and science would get together to watch. Even if we were working out on the deck there were other members of the scientific party who were not involved in that particular work who would come in and enjoy videos with crew members. That to this day is all in place, but now many crew members have their own VCRs and TVs in their quarters and their own libraries. So there is a little bit of separation there but that is for their own private time, off duty, off hours, off watch time. What I see at least up until my last days, there's so much other time to be together to work together, to socialize at meals that I don't see any great separation. It still was a family, a family aboard.

Frank - You don't think that's being eroded in any way?

Hovey - I do not.

Frank - There's no hidden agenda in the question

Hovey - No no

Frank - One of the reasons I asked that was one of the members of the scientific party when the ATLANTIS made her long-delayed visit home said that by the time they got in it was literally open warfare between the scientific staff and the crew and some of the other things I've heard from some of the other people doing their oral histories have seen an erosion of the two communities, the crew and the families getting stressed so to speak. That's why I asked that.

Hovey - Right. I didn't see that in my cruise experiences, but I'm WHOI. I didn't sail on too many other non-WHOI ships, did on occasion, but warm strong relationships WHOI ships with WHOI scientists. Now maybe if a ship gets loaded up with some other institution's personnel science groups, maybe there was some fracture going on, but I must say in all of my experiences crew and WHOI scientists worked as one unit, happy to say.

Frank - So then on board ship when you're out to sea it doesn't make any difference whether you're a PhD or a world leader or whether you're some guy that's doing your first cruise out there as a deck worker it's really one.

Hovey - The science depended on the crew in almost all cases. Sometimes some institutions allow the scientists to handle their gear. The boatswain is there to keep the ship in ship shape. Those kinds of institutional vessels generally have a resident tech aboard that will help but in most cases you operate your own gear if you have had some experience. If you get in trouble they have the resources, both the resident tech and the boatswain to help you. But I sailed on the WECOMA a couple of times, Oregon's OCEANUS-like vessel, and they had a resident tech, boatswain system there where the resident tech was helping science doing their work. The boatswain was up in the bow chipping paint while you used an

able-bodied seaman to run the crane. You did all the hand signals to put your gear in, pull it back, put it on the deck, secure it, shut down the winch - you give the directions to the able bodied seaman.

Frank - Now, all this equipment on board ship, one of the things you haven't mentioned. This could be kind of dangerous with all these cables and things like that.

Hovey -Yeah

Frank - Did you have any experiences where sea conditions were such that deployment or recovery was really marginal?

Hovey - Yes. One of the pieces of gear that I was associated with over much of my WHOI career was an MKIII box corer, which is a ton and a half piece of gear that takes a bottom sediment sample. It penetrates the sediments because of its weight. You don't try to run it into the bottom sediment at a fast rate. You try to sit it on the bottom as gently as you can and allow the lead-filled column to push a 50x50x50 centimeter stainless steel box into soft sediment. Chemistry, biology, geologists have used this piece of gear now for twenty, twenty-five years or something very much like it. So in a very soft sediment you can come up with a 50x50x50 block of mud from the ocean bottom. That adds another 500 pounds, 300 pounds to your ton and a half piece of gear, so it's a sizeable piece of gear. I'm sure there are greater ones like the great big megacorer that the geologists used years ago. But anyway it's a sizeable piece of gear and working in depths of 4000 meters deep or so you run this piece of gear up and down the water column 40 to 50 meters a minute. That's roughly a hundred minutes one way. So 200 minutes setting it down and taking your sample and coming back - couple of hours one deployment. We were on the GYRE, Texas A & M's mudboat that happened to be up here and we were doing some box coring off that vessel in marginal conditions. The weather forecast said we could manage under those particular conditions so we deployed, watched the pinger as it went down through the water column. We have a particular pinger on the corer that enables you to follow the corer through the water column. The ping is traced on the pages of the depth recorder, PGR. The trace will cross the page every 750 meters so one can determine exactly where the corer will touch the bottom. So we were all inside watching the trace and the ship started to roll a little bit more than earlier. By the time we were ready to bring it aboard to complete our sampling the weather had really turned to crap. The GYRE was an old mudboat, Gulf of Mexico mudboat that had a sea level stern so it's very easy for any sizeable wave to break right into the ship. The gunnels were at the level of the deck, so anything that washed on quickly washed right off again. So we were bouncing around quite a bit but we had to bring the piece of gear aboard. Two ton piece of gear. So with help from the bridge we got the ship situated where it would move the least, with the prevailing winds and waves and the piece of gear maybe ten, twenty feet below the surface, watched the coming waves and got everybody ready with hooks and lines to handle the gear and thought we saw we had a time window where we could bring it up, secure it, take a sample out and get away from the punching waves. We gave the hand signal to the crane operator and pulled it up out of the water. The A-frame moved in slowly. We didn't have a crane on the GYRE like the KNORR to move it in quickly. We had to move the A-frame in after we got our tag lines on it, did all of that quite well but then the biggest, most humongous wave reared up off the stern and plowed onto the stern. Nobody got hit but Hovey wasn't holding on and this wave picked him right up, plopped him right on his belly and the stern of the GYRE was I'm going to say 30 - 35 feet long from the stern to the house. It's like one of the Steamship Authority boats that transports trucks and things back and forth, big long stern. The wave picked me right up and deposited me back against the house skimming along the deck in a most vulnerable position, feet first, going back on my belly like that and I thank the good Lord that I didn't get moved over something sticking out of the deck, because I would have caught it right in a most uncomfortable area of my body. So sometimes things like that happen, but a prevailing modus operandi that I and all my compadres have worked under is no piece of gear is worth losing your life or limb for. It has been very easy over the years with no trepidation or no uncomfortable feeling if any of us SCUBA diving or working the deck just say to the chief scientist or senior person who's in charge "I'm uncomfortable with the conditions. Can we stop operations?" and it's never been in my experience someone in charge has said "Well you wimp. You go down below. We're going to keep on going." If anybody voiced a concern, say a concern about the conditions we shut down, stopped operations, told the bridge. And oftentimes the bridge was first to say "You know I'm kind of unhappy with the conditions out there." The captain is ultimately responsible

for the safety of all crew and science "Let's stop for a while. We'll point the ship up into the weather. Let's hold position for a couple of hours, half a day, until the conditions get better." It happened many times.

Frank - Have you seen any accidents of any kind on board, other than yourself skidding across the fantail?

Hovey - No I have never been on board ship where somebody was seriously hurt.

Frank - How about equipment?

Hovey - In my experience I can't think of any seriously banged up equipment. I have a wonderful story of working the box corer on the KNORR with Jerry Cotter as boatswain. We were working deep - I'm going to say 3,000-4,000 meters deep deployment, time consuming. Again, because you want to be careful where the bottom is, set your gear in and because an awful lot of scientists using this particular piece of gear were not only interested in the chemistry or the biology or the geology of the 50 centimeters deep mud, they also were very much interested in water-sediment interface. You send a piece of gear down anything faster than five or ten meters per minute you blow away the interface because of the bow wave of your gear. So this particular gear had louvers on the top of the box so that as you traveled through the water column the water could flush through and you didn't set up a bow wave. The frame itself could set up a wave so you had to be careful setting the corer gently on the bottom and that was an important part of your deployment. So fifty meters a minute going down the water column, we knew how deep it was but we messed up a little bit. We, for whatever reason, were not careful at the rate of sending out the trawl cable. So we took the sample quite well, hauling back and typically when there's a hundred meters or so left before the piece of gear comes up out of the surface everybody that's going to help handling the gear, bring it aboard, stands around the fantail, getting the hooks with the tag lines so you can control the corer while getting it up out of the water column and onto the deck. So we're all out there ready to do that. Two hundred meters left when out of the water (everybody wants to be first to sight the gear and notify the winch operator with the "sight/surface" call) comes an overhand knot on half inch trawl cable and the overhand knot is smaller than my fist. Everybody knew we didn't put it in that way, because no way could a knot of trawl cable go through the block system. From the winch, up the pedestal, out the boom, through its series of shivs impossible, but yet my sampler was still 200 meters deep. Here's a knot. How in the world did that happen. Dear Jerry Cotter. We just couldn't run the knot through the system. He had these Chinese fingers, steel hairpin kind of things that he twisted around the cable, hose clamped tightly and held the cable.

Frank - Like the old Chinese finger trap

Hovey - Yes, he wound the fingers below the knot. The fingers had a loop on it and he secured it tightly. Believe it or not the friction developed supported the remaining 200 meters of cable plus my piece of gear, so that we secured the cable and corer to the side of the ship and cut out the knot which I have on my mantlepiece since. I actually use it when I give my dock tours just to show the public what crazy things can happen. So he fed the cable through and then with tuggers aboard we had to pull up the remaining 200 meters in stages using the tuggers, re-securing the fingers until we could grasp the corer and crane it aboard.

Frank - You're lucky the weather didn't go down the tubes then too.

Hovey - Yeah. And to this day the only way we could imagine this happening was that the trawl cable got ahead of the corer and a perfect loop was formed on the ocean bottom. We were sure we didn't pay out too much extra cable yet the corer swam exactly inside the loop. When we hauled back the loop skidded up the side of the corer and tied this perfect overhand knot 200 meters above the box corer.

Frank - Typical of people in the sciences, you talk in meters. I can picture someone listening to this saying oh 200 meters couldn't they send a SCUBA diver down. That's more than a couple of football

fields put together and a pretty good size piece of equipment. Now this piece of equipment is the one that you can take out and put smaller cores in and lift out.

Hovey - Yes. In fact a lot of the 50x50 stainless steel boxes have twenty-five 10x10 centimeter inserts, 5x5 because that box is big enough you can divide it up into twenty-five sub cores to give to a variety of scientists a part of the sample, so oftentimes you'd have five or six biologists that would take a core, a couple of rare metal experts wanting to know the different kinds of rare metal that are in the sediments and we had to have special inserts for them so the aluminum didn't contaminate the sediments. You take your mud sample from inside even that subsample. Some biologists were interested in nematodes, a particular worm that are scarce so they'd get their own subcore. Chemists as the biologists like to take as many subsamples as they could because they like to use statistics to say okay we can confidently say within certain limits that in this particular part of the ocean you could count on fifty of these little clams per square meter -statistics help and the more subsamples you can get out of a particular big sample help you in that approach.

Frank - Did you have any favorite ports when you were

Hovey - Gosh, I would say no favorites, but having not traveled much in my younger years going to a foreign port was a wonderful experience for me. I happened to do an awful lot of work off the west coast of Peru, so Lima and Callao were extremely interesting to visit. Unfortunately I never made it to Machu Pichu. I was able to travel a little bit in Europe with Stanley Watson's group before we met the ATLANTIS II in the Canaries. When I worked for Gil Rowe we met the A II again in the Canaries on a later cruise. We did some nearshore SCUBA diving work along Spanish Sahara so we utilized a small fishing boat out of Nouadhibou which is the capital of Spanish Sahara. It's not Spanish Sahara nowadays, but (I may have my geography mixed up a little bit)

Frank - Just below Morocco.

Hovey - Yes. Let's see, numerous American ports, United States ports, in particular San Diego. I went back there many times because the ATLANTIS II when it was the ALVIN mothership and then the new ATLANTIS used San Diego shipyards for repair and refurbishment while working in the Pacific. Went to Hawaii once to prepare the MOANA WAVE for a Peru cruise for John Farrington. That was quite a lovely trip.

Frank - I can imagine.

Hovey - Newport, Oregon, was a lovely northern city that I enjoyed very much a couple of times utilizing the WECOMA out of Newport getting ready for STRESS cruises. STRESS was an acronym for some title of work done by Cheryl Ann Butman when I worked with her for a few years. I fell in love with the northern Oregon environment. The seacoast up there is quite nice. But other than maybe being moved by the poverty and general poorness of the Spanish Sahara area and the folk that lived there, I pretty much enjoyed all of the foreign and home ports.

Frank - You know it's interesting. I asked Al Woodcock, who actually was a crewman on the first ATLANTIS coming across from Copenhagen why he got into this field and he said "Well, basically it was my only chance to get to England and see places like that. And you know you said the same kind of thing, and I've wondered if this attraction for the water world doesn't also smack of a great deal of possibility of adventure sort of thing.

Hovey - Yeah.

Frank - And you know I see folks like yourself and the scientists that are involved and so on there's a kind of an Indiana Jones quality, you know what I mean. Because you could be doing the same technical work in Dow Chemical inland, but you didn't pick that. Tell me what makes you gravitate toward it.

Hovey - I think for me it was growing up near the marine environment with a biology interest, just loving to tromp onto beaches and observing critters that live there. I can remember stumbling across horseshoe crabs when I was a kid in Buttermilk Bay right up off of Buzzards Bay and just being in awe of this animal not knowing its prehistoric connection but just seeing this critter with a spiky tail. You don't want to step on it. And we used to go out at low tide off of Hideaway Village at Buttermilk Bay and kick our feet down in the mucky mud to get our quahogs for supper. I was just a young high schooler at the time and the more experienced people would say "watch out for those horseshoe crabs. You don't want to run its tail through your feet", not that you ever would. Still it was just the hoot of growing up there and Mum and Dad would take us to beaches and any water environment whenever they could like Lake Winnepesaukee up in New Hampshire. It was the charm and mystery of the seashore that led me in that direction and although in the early years I never went to sea on vessels it was always sort of within paddling distance.

Frank - Yeah, there's a commonality here that you come from the crowded East Coast and some of these beach areas, bog areas, things like that, it's almost like exploring new territory cause you can find empty beaches. You can certainly find empty sloughs through the bogs.

Hovey - Yeah. And one of Rose's and my favorite places when we were falling in love was to drive out to the National Seashore and walk the beaches. Other than sea life you couldn't see a human for miles and it was just heavenly.

Frank - I'm with Hovey Clifford and we're going through a whole host of things and we actually still have a whole host of things to go through here. I'd like you to start off Hovey with talking about your job career here, who you worked for, what kind of things you did for them and you know people that you crossed paths with and all that sort of thing.

Hovey - Okay. Thanks Frank. We kind of ended up the last tape sort of halfway through my career time period with Stan Watson's microbiology group and a couple of things really stuck out in my mind and they were the few oceanographic cruises that I made with Stanley's group, my early days here at WHOI and we touched on the GOSNOLD trip down the Mississippi River and out into the Gulf of Mexico, but another real important cruise that I participated in when I worked for Stanley and Tony Remsen and other members of Stanley's group was an ATLANTIS II cruise during the summer months, I've forgotten just when, but it was called a New York Bight cruise where John Ryther, who was Chairman of the Biology Department at that time, got a big bunch of funding to do a big survey of the New York Bight area and invited many of the biologists in the WHOI Biology Department to participate, so there were not only scientists interested in surface water questions but water column questions, and then there was a whole contingent of scientists interested in the bottom interface and then the sediment. So John Ryther had set up a grid of I'm going to guess about forty to fifty stations in the greater New York Bight area beginning at the mouth of the Hudson River and then for the three week cruise we'd go from one station to the other, and every scientist got a chance at that particular station to do his thing. So at every station, because I was working for Stanley and his interest being mostly water column sampling, we would do the Niskin baggies and Niskin bottle casts on just about every one of the stations. But there were a couple of things that stuck out in my mind about this cruise. One of them was the camaraderie and how scientists approached cruises at that time. Back in those days we could drink alcohol aboard. We could bring alcoholic beverages along with us and I remember John Ryther in his daily planning would make sure during the 5:00 to 6:00 p.m. time slot that there was a long cast. Now granted some of the early nearshore stations were rather shallow, but he had a knack of timing it so that just before supper there was a long period of work for a few so the majority of the science party could come to the chief scientist's cabin and enjoy a cocktail or two. It was exceedingly well attended and we had a grand time, and this one particular feature of that experience sticks out in my mind. Nat Corwin and Phil Clarner were nutrient specialists and they made most of the afternoon tea times. Their most enjoyable liquid refreshment before dinner were gin and tonics and, to this day, I have this clear image in my mind of Natty and Phil going up to the table, the center table in John Ryther's chief scientist quarters and pouring some gin over ice and then going to the vermouth bottle, uncorking it and taking their glass up to the top of the vermouth bottle and with their other hand waving the fumes that were coming out of the vermouth bottle over their glass. Then they would recork the vermouth bottle and consume their drink to exceeding delight.

Frank - Extra dry.

Hovey - Right. Stuck in my mind. And we'd do that every late afternoon and then we'd all go down and enjoy the evening meal. After supper we would get back to work.

Frank - Did the chief scientist supply all the alcohol?

Hovey - Most of it. I think people who had a special liking for their own particular alcohol or something like that would bring their own bottle. But even though everyone enjoyed this, I never recall anyone taking advantage of it. I don't remember anybody getting so inebriated that they could not do their job and do their job well.

Frank - In those early years did you have scientists from other institutions aboard or were they all WHOI then?

Hovey - On this particular cruise all WHOI, but even back then other cruises I recall where there'd be other scientists from other institutions coming to study the particular spot where this cruise had been planned to go.

Frank - So this cocktail hour then would have been a chance to get to know these people?

Hovey - Positively, yes and even science was discussed. It wasn't just gossip and joking around. There were periods when we'd talk about the plans for the next day or the results of the previous day.

Frank - Were any ideas discussed or different approaches?

Hovey - Yeah, if a particular scientist was having a particular problem with their work there was lots of available verbal and even physical help to try to resolve the problem. Another incident that sticks in my mind about this, one of my first cruises, was the ATLANTIS II, it was a WHOI to WHOI cruise, this New York Bight trip and the ATLANTIS II needed to refuel. They went to Newport to refuel before they actually went to the New York Bight. So I seem to recall we left WHOI early afternoon, steamed to Newport and refueled at the dock somewhere in the Newport area. The crew members had been doing some ship maintenance up in the bow of the ATLANTIS II and as we approached Newport berthing area to refuel I thought it'd be awfully good to walk up on the bow and watch the tie-up procedure and not being careful to observe what maintenance had been being conducted up in the bow, to look over the prow, the real pointy end of the ATLANTIS II, I put my arms up on the rail which had just had a brand new coat of WHOI blue applied. I plopped my arms and elbows right down on the rail to look over and watch the bow end tie-up of the ATLANTIS II and as soon as I set my arms down I realized what had gone on shortly before the berthing process. I looked around and realized that the whole bridge was loaded with crew to go through the tie-up process and were aware of what ship maintenance had been conducted on the bow. So I was stuck there and tried to be real cool about peeling myself off the prow, turned around and with blue arms walked back to the stern of the ship to clean up. My ego was sort of put in proper order after that experience.

Frank - Did they let you know that they'd all been watching?

Hovey - Yeah. Rose had made me, she thought to be comfortable working at sea and warm at the same time, (it was summer so we didn't have to have a lot of extra warm clothing) some corduroy slip on jerseys. It was similar to a slip on T-shirt, open at the neck and open at the shoulders, no sleeves. I was still naive about the dress code on board WHOI ships, and went to an evening meal with just a slip-on corduroy shirt one of the very first evenings there on board. The very next day Captain Tully sent a memorandum to science saying that there'll be no "oddments" worn to the meals on board ship, so I got an early lesson on dress code on the WHOI ships.

Frank - What would they expect you to wear at meals?

Hovey - Well back in those days I don't think T-shirts would have been acceptable. Because I thought of this as being a little over garment, although I didn't wear anything underneath it I thought it'd be okay, but I think a dress shirt, no tie or anything like that, but a short sleeved, buttoned down dress shirt with a collar was sort of what was expected at evening meals and I would say all meals.

Frank - So the Captain wanted to have a certain amount of civilization on board.

Hovey - Positively. And another thing I learned on this cruise was that you never jeopardized life and limb in any situation that might arise on board ship. Your life came first. A multi-million dollar piece of equipment, although it may be difficult to replace, could always be replaced. And what brought this to my attention was this incident. I was doing an evening cast on the hydro platform, a platform with waist high rails that extended out over the edge of the ship. One could comfortably hang instruments on the hydro wire. It was early evening, I'm going to say eight or nine o'clock, and John Ryther, the Chief Scientist and also the Departmental Chairman, was fishing off the stern. The A II at that time had gunnel railings from which you could remove sections if you were deploying large pieces of gear. These removed sections gave you easy access to the ocean so that you didn't have to raise your instrument high up over the side to place it in the water. There was a safety line tied across the space so no one would fall overboard. The fantail was very well lit. I was busy putting my instruments on the hydro wire, John was fishing, and the ship took a little bit of a roll. A large cylinder of lead which served as a hydroweight for the heavier trawl wire was resting unsecured on the port side of the fantail. When you're in real wonderful, calm conditions there's a tendency in your busy routine on board ship to just set your gear down without securing it and to go about your business, and if you anticipate conditions getting worse you scurry about and secure gear. Well this weight was a smooth cylinder and when the ship just took a little bit of a roll it set this large weight in motion. It was heading for the open section of the railing on the other side of the ship. I heard it start to rumble as I was doing my work on the hydro wire, looked at it and momentarily thought shall I stop what I'm doing, run down there, because I was on the upper deck level. I could have reached it because it was rolling very slowly and perhaps throw something in its path. There were a few seconds of indecision. John Ryther happened to look at it the same time interrupting his casting off the stern. Then we both looked at each other. We both smiled and realized that if it makes it and goes off the side we can always replace the weight. We're not going to run to it and maybe put our life in jeopardy trying to stop this great big glob of lead weight. It, indeed just kept on going and gave us a big beautiful kerplunk and we both kissed it goodbye and realized that it easily could be replaced. Mashed fingers or toes were not worth a blob of lead. And that experience has sustained me throughout my career. There have been other situations where valuable expensive equipment has found its way to the bottom of the ocean and we've made the decision not to place ourselves in harm's way. There's a time when you draw the line. I'm not going to hurt myself, just let it go. Everyone who goes to sea realizes there is a chance of losing their gear.

Frank - You know, it brings up an interesting point, Hovey. You talked about basically a relatively calm day and you just had a little roll. What's it like when the weather is really kicking up and you're out on the hero board out there. What's that situation, can you draw me a word picture of what it's like.

Hovey - Generally you bring clothing so you're prepared for difficult conditions. If it's going to be real cold you're prepared. If it's going to be rainy you're prepared. If it's going to be the heat of the summer you bring proper materials to protect yourself, so you're always ready for miserable conditions. You bring medicines to help you deal with seasickness. If crew or the scientific party at any time feel that conditions may lead to physical harm the captain will halt operations. I can remember a quick developing storm on an OCEANUS cruise in the Atlantic where radar picked up a squall coming. Unfortunately it came upon us real fast. The skipper saw it and stopped operations. Fortunately we were not in the middle of a long cast, where you had to expend a considerable amount of time bringing your equipment back. He told us all to get inside, batten down, secure operations and make sure all your equipment was securely in place. Also be ready to get bounced around and if I recall correctly it passed in a couple of hours. Things calmed down again. He didn't see any other disturbance coming on long-distance radar and let us go back to work again.

Frank - Any of those situations ever really frighten you?

Hovey - No. We had a fire on the EASTWARD in my early WHOI days. EASTWARD was the oceanographic vessel at that time for Duke University. And we had a stack fire in the middle of the night so we had a fire and boat drill, which means that we all had to put on all of our lifesaving equipment and congregate in the science area. If crew needed us to do anything they knew right where to find us and use us in any way to help deal the problem. The crew put out the fire just fine, although I was stressed at that time, we were a long way from shore and I didn't like the idea of abandoning ship. We didn't have to go back into port. We were able to maintain the cruise focus and finish the cruise. I gotta think that was the most worrisome time. Another time was back in the days when the LULU was the mother ship of the ALVIN. Occasionally an ALVIN cruise was long enough that they couldn't berth enough scientists aboard the LULU for the cruise and a ship would work with the ALVIN/LULU. Scientific personnel would transfer by small boat back and forth between LULU and GOSNOLD. Scientists on the GOSNOLD would come over and spend a day on the LULU. Gil Rowe and I had done an ALVIN dive and it was our time to return to the GOSNOLD. The weather had gone to hell while we were down in the ALVIN, so not only was it a treacherous ALVIN retrieval, but also a very difficult transfer. Gil Rowe and I plus a couple of others went over to the GOSNOLD under difficult conditions because you had to climb up rope ladders. It was easy to get into a small boat off the pontoons of the LULU because the level of the pontoons was slightly above sea level. Much different boarding the GOSNOLD with its high sides. You had to grab a mooring rope ladder and climb up while it thrashed against the side of the ship. All the other large vessels, OCEANUS, ATLANTIS, KNORR and other vessels in the oceanographic community that I have sailed on I can't ever remember worrying about the ship not being able to deal with poor sea conditions.

Frank - Did you have the same amount of confidence in ships from other institutions as you had on WHOI ships?

Hovey - I did. I really did. All of them were exceedingly professional. I did witness an incident approaching Newport Harbor for the WECOMA, the Oregon sister ship to our OCEANUS. Poor meteorological conditions, a sandbar just outside Newport Harbor and large standing waves often causes very difficult approaches. One has to time the approach into the harbor carefully with wind direction, tide level and the other conditions. The skipper decided he didn't have as much experience as the chief mate who came from a fishing boat career in and out of those waters and was exceedingly familiar in dealing with these conditions. The skipper stepped aside and let the chief mate bring it in. It was a narrow channel if I remember, breakwaters coming with high standing waves and he sailed in just beautifully. That's the one and only time I've ever seen a skipper step aside for a mate, because typically it is the captain's job to dock vessels unless a pilot is involved.

Frank - You know you've talked about a number of different surface vessels and you just mentioned ALVIN. Now for anyone that might not know ALVIN is the longest lasting deep submersible in the history of the planet. How did your first chance to dive in ALVIN come about?

Hovey - First of all, being a biologist, being able to take my eyes down to the depths of the ocean was, has been, will always be one of the most wonderful experiences I have enjoyed. Don't know if I ever will enjoy it again but who knows. After I worked for Stanley from 1969 to 1972 a young benthic ecologist, one who studies bottom organisms and how they relate to the benthic environment, joined the Oceanographic. His name was Gil Rowe and he was very creative in getting funding. He struck up a relationship with an engineer by the name of John Dunlea. John Dunlea had the patent on the process of collecting solid waste, compacting it and baling it. Compacting, baling, wrapping waste material, predominantly metals and paper products in gigantic bales and these bales roughly had a rectangular shape, five feet high, four feet wide and I'm going to say seven to eight feet long, gigantic bales. And this process by municipal departments in a number of cities had already been started. San Diego was already filling up landfills with these monster bales of refuse, waste. But Gilbert interested in the bottom of the ocean and Jack looking for another way to dispose of this waste material were considering disposal in the deep ocean. Gilbert talked Jack into shipping eight of these monster bales cross country, San Diego to WHOI, and soon we had eight monster blocks of refuse all bundled up wonderfully sitting down in the lower School Street parking lot. Six of them we put in a teeter totter position on the gunnel on Dick

Edwards' RV JONATHAN EDWARDS which sat over on the corner of the WHOI dock. Well these blocks of refuse were exceedingly heavy, I'm going to say a couple of tons each. We put six of them, three on each side of Dick Edwards' boat and deposited them in a big pile over in Great Harbor in forty-five feet of water so that we could study how they would decay in a nearshore environment all aiming toward deep sea disposal. First of all we didn't even know how the bale would maintain its integrity going from the sea surface to the sea bottom. At the time the Alcoa Aluminum Company was trying to entice the scientific community around the United States into using their aluminum vessel, the ALCOA SEAPROBE. They visited WHOI to make the ship available for use. We placed the seventh bale aboard the SEAPROBE and secured it to the gantry boom. As the boom lowered the bale to the ocean bottom, in about 1,000 meters of water, we were able to watch the descent on TV monitors. The bale didn't show any ill effects of its trip to the bottom supporting the thesis that the ocean bottom may be a possible storage environment for compacted solid waste without debris covering the sea surface, water column or ocean bottom. Months later we were able to put the eighth bale on the LULU because Gilbert was able to participate in an ALVIN cruise scheduled to work around DWD 106. This stood for deep water dumpsite, located 106 miles from New York Harbor where historically all of the vessels with municipal wastes from the City of New York would dump all that waste material. There was a lot of concern about how that was affecting the environment. There was worry that the ships weren't going all the way out to 106 miles. There was evidence that they were releasing the waste on the way because some materials were washing ashore. The site was roughly on the 2,000 meter depth contour and for numerous reasons WHOI scientists over the years found the area very interesting to study. So we had the chance to dump the eighth bale out there, go down and observe it with the ALVIN, take pictures of it, and hopefully over the years monitor its decay. It reached the bottom in perfect shape nicely wrapped in its baling wires and plastic. We took pictures of it and a couple of years later other WHOI scientists doing other work in DWD 106 came upon it. Unfortunately Jack Dunlea had died of a heart attack so funding for the project dried up. Fred Grassle, another benthic ecologist at the Oceanographic, studying other things at DWD 106 came upon it, filmed it, and the pictures he brought back seemed to indicate that after two years the block of waste was just as we had placed it. A community of sea urchins had moved onto and around the bale but the plastic covering looked very much intact and we speculated that the urchins were consuming the slime that had grown on the plastic. There was no evidence whatsoever that the wire banding had decayed and the material had slumped into a pile on the bottom. The six bales in Great Harbor were observed and studied for about three or four years because of their close proximity. We observed that the bales stayed intact during those years although covered with a few inches of sediment. A rich community of capitellid worms seemed to be the first animals to begin living on and in the waste material. Even though Great Harbor is a popular dive site for WHOI SCUBA divers, we visited the bales less and less. Today I cannot say whether we still have six recognizable bales there or the material has become part of the bottom contour.

Frank - It brings up a whole bunch of questions. One of them, I'd like to go back to the ALVIN again. You must have found out before the day you went down that you were going to dive in the ALVIN.

Hovey - Yes.

Frank - Excited, apprehensive, were you nervous about it at all?

Hovey - Excited beyond explanation. I had heard a little bit about this wonderful sub and, before anybody dives in the sub for the first time, you're taken through the process and the safety and what you must do, as a scientist how to behave in case you get in trouble. A good hour of indoctrination and you soon learn of the safety redundancy that's built into the sub, and ultimately unless you drive the sub into a situation where it's utterly impossible there's always that resort, grab the handle in the bottom of the sphere and twist it freeing the sphere to float to the surface.

Frank - Now who gave you this orientation? Was it one of the ALVIN group or was it the pilot?

Hovey - It was the pilot. It was one of the pilots, right off hand I can't think of the names. One has recently died.

Frank - Jack Donnelly.

Hovey - Wasn't Jack. It'll come to me. In my experience, and even with recent chances to dive the pilots will again go over all that is important. Having had a little bit of compressed gas experience in SCUBA diving, being assured that you maintain the terrestrial atmosphere inside the sub went a long way to relieve any apprehension. Other than being a little cool in the sub and you dress appropriately, there is no feeling whatsoever about the alien environment that's outside. I was not uncomfortable at all in my first or any of my experiences, although later on I'll tell you of an experience where I thought the sub was getting into a situation that bothered me. And why not bring it up right now. Later on in my WHOI career I worked for Vaughan Bowen in the Chemistry Department. One of his projects was working for the Navy to see if the nuclear power plant of the SCORPION, because of its catastrophe, had been compromised to a point where the radioactivity was leaking out into the environment. So one of our ALVIN excursions was to make a dive next to the SCORPION to put some sensors beside the sub's reactor. After some time period the sensors would be retrieved to see if leakage was detected. Anybody who has made dives in the ALVIN realized or quickly learned that the two viewports that scientists can look out of are not as convenient as the port that the operator uses. Our line of vision is directed towards the nearby bottom. To look horizontally or up was impossible. As we approached the SCORPION I was able to glance out the operator's window and thought I saw what looked like the SCORPION. I think the THRESHER blew up so there were pieces scattered all over the bottom, but something else I think happened to the SCORPION where you had a relatively intact half sub. So I thought I saw a great big section of the sub, as though you had taken a hot dog, busted it right in half and we were sailing up to the face of one of the sections of the sub. Now the sub was a big sub, I'm guessing two or three stories high, at least that's what I imagined and what I thought I saw as we approached it. Well the operator got so close to the front of that section that in my mind as I felt the movement of the ALVIN I swore that he was backing the sub right inside of the SCORPION and I imagined cables, fractured structural components and all kinds of junk falling out of the SCORPION and anchoring us to the bottom of the ocean. I gotta tell you I wet my pants figuratively. We have little bottles to hold our waste material. I didn't have to use it but I was really worried that we were going to get stuck there forever.

Frank - Because that has happened.

Hovey - Yes, I know. But we went about our business after we set the sensors in place, the operator conveniently and efficiently moved away from the sub and we went about our business without feeling that we were in any danger. That was the only time I can recall in any of my ALVIN dives where I had a bit of trepidation.

Frank - You mean all of a sudden the amount of pressure outside and all that kind of stuff kind of came home.

Hovey - Yeah.

Frank - Have you ever considered yourself or have you ever talked to any of the pilots who have just reached the point where they've said I can't do this any more.

Hovey - My closest experience to that is talking to pilots who have left, not necessarily left the ALVIN program, but left being an active pilot because of burnout. Some scientists can be extremely demanding and to try to do every little thing during the dive, reacting on the bottom to their wishes, trying to give the very best product they can to the scientists, because ultimately the scientists go back to the granting agency and say whether they had productive or unproductive dives. You run into conditions where you just can't do everything. There may be bottom currents moving the sub around so it's very difficult to take a box corer sample right on a spot or right on that worm tube hole that the scientist saw out his viewport. So I've only been aware of pilots who get burned out - they do not find going down as often as they must on a particular cruise so interesting any more and have left the program totally or perhaps become an administrator at home or chief pilot on cruises, always available maybe to take over for a dive if a regular pilot is ill or there are so many dives on a particular cruise that a regular pilot needs a break. I think they generally go to sea with two or three divers and they will rotate

the divers throughout the particular program.. I've never seen a pilot just throw up his hands and say I don't want to ever do this again. They just tend to slowly burn out like old generals never die they just fade away.

Frank - Well when people see pictures of the ALVIN they see a complete submersible. They don't see that six foot across personnel sphere. You're a pretty big guy, Hovey. How did you get in? How was the comfort level down there?

Hovey - It took some effort to get comfortable. This particular dive I made to the US Navy sub was with another chemistry technician in Vaughan Bowen's group by the name of Dave Schneider and he's at least as tall as I am, so a good portion of that sequence up and down the water column and on the bottom our feet were in each other's face, so to speak. But you make do. The sphere is lined with comfortable blankets and, unless you've filled up the sphere with all kinds of gear, there are ways to move around and find a position where you can effectively look out your viewport, operate a camera or help operate your piece of gear that's out on the basket to take samples or whatever. As big as I am I never recall where the uncomfortableness of that rather confined space interfered with my thorough enjoyment of a particular dive. But you've gotta work at it. You can move around, stretch, stop operations if you want to sit on the pilot's seat where you can bend and twist around and work muscles that might have gotten stiff or something like that, but everybody goes through this process unless you're three very smallish people that can move around comfortably in that sphere.

Frank - What Hovey euphemistically called a pilot's seat I wouldn't want to leave anyone with a picture of some kind of space shuttle-like. I mean you're talking about basically a padded paint bucket that you're sitting on.

Hovey - Exactly.

Frank - Were you ever down with someone that was a difficult person.

Hovey - No. Without any hesitation. Most of my experiences were with fellow researchers who hadn't made many dives. So it was mostly new and wonderful experiences for all my associates. I'm guessing I might have made in my WHOI career ten or fifteen ALVIN dives and I can happily say all my associates in those dives were most enjoyable divemates. It has been my experience on ALVIN cruises that the more experienced divers, and this is a real generalization, participants like the Chief Scientist or the scientists that received the funding for the cruise are the ones to dive first, do the important work that is most important to their projects. If the cruise is going well and the scientist has confidence in his or her technician the technician will have opportunities to dive. So in general in ALVIN cruises the more experienced participants or project leaders will fill sub spaces, then the less experienced will have their chances. So it's a new and wonderful experience but there 's no chance of it becoming boring; whereas, for the pilot you could see where cruise after cruise and day after day trying to give the very best product to science it can get old for some.

Frank - It is interesting, because it is a very high stress field. You do have to sell the product. There's no two ways about it. It's gotta continue to be funded. It is not inexpensive to operate. You are operating in the most hostile environment that you could possibly find on this planet, so I would think the potential for second guessing would be a little high. Did your wife or daughter ever express any concerns about your diving?

Hovey - Sheila, my daughter, was too young. Rose, she grew up in an environment where her Dad was a treasurer in a shoe factory back home in Rockland and it was just the way Rose's Mom and Dad handled things that work was work, home was home. That philosophy sort of carried over with us. She let me be totally independent with work until, of course, I would bring problems home and she would help me deal with them. I was always comfortable leaving home for cruises or ALVIN dives because she took such fine care of home while I was gone. If she worried she kept it to herself and it always was a joyous reunion when I returned.

Frank - When you surface in the ALVIN and you're waiting to be picked up, did you ever experience any squeamishness or queasiness at that point?

Hovey - It is such a stable instrument that descending through the water column, moving around on the bottom, then ascending to the surface are so different to being bounced around on the surface and oftentimes you don't get plucked up out of the water immediately. That process has gotten better and better. I was able to go out on the new ATLANTIS a couple of times out of San Diego towards the end of my career where I witnessed that process. The ship knows pretty much right where that sub is surfacing. There's a skiff with divers right there waiting for them to pop up. The ship moves over close to the sub dragging a tow line. As soon as the ship gets close to the sub the tow line is attached and the sub is pulled under the ATLANTIS' A-frame. Swimmers attach the hoisting line to the sub and it is lifted out of the water. Now one of my first dives when we had to be retrieved in tough conditions by the LULU that was a different story. I almost lost it. During that time if the surface conditions are wretched one may get seasick. But the process is getting shorter and shorter - more streamlined - lessening the chances of seasickness. How we got caught in such bad conditions I don't know because a great deal of consideration for weather changes goes into dive plans. Is there a chance you may deploy in real calm weather and then have the weather go to hell. And there's constant communication between sub and surface so once in a while a dive is cut short because of deteriorating conditions. Also the sub is deployed and retrieved in daylight for the advantage of sunlight. Longer bottom times are an advantage in summer diving because of the longer days.

Frank - Well their old off-the-cuff kind of comment is that the pilot has to get home for dinner. But that means you're gonna operate in daylight hours. Now you get bounced around, you get pulled back in and then what you have to look forward to is a night on the LULU. Now tell me about the LULU what that was like.

Hovey - I have also seen, getting back to the queasiness story, scientists who could withstand the motion in the sub, on the surface climb out of the sub onto the LULU and, because of the different motion, totally lose their stomach contents over the side. Okay science quarters were just 8 x 20 foot shipping vans converted into science labs and located on the upper level. Living quarters, berths were in the pontoons.

Frank - The tube of doom.

Hovey - Yeah, and two or three bunks on each side suspended on the walls of the pontoon, hot, muggy, smelly and your only privacy was curtains strung up around the three sides of your bunk. Mess hall was, I think, another van, rather compact, and again up high where there's the tendency to have to experience a little more motion than you would normally.. And there weren't just two person quarters. Your bunk area had, if I remember correctly, maybe in the order of fifteen people, and moving to watches and just coughing or hacking or sneezing or snoring because there were so many people nearby - it wasn't the most desirable situation. Crew and science berthed together, although later on, I think, we, in trying to get as many scientists involved in a particular cruise, had four bunk berthing quarters up on the deck, another converted shipping van. Fortunately I only had to sail on the LULU a few times. Eventually I moved off the LULU onto the support vessel and returned to the two-person quarters which was a much more comfortable situation.

Frank - Well I would expect there would have been a much higher degree of burnout if the LULU was typical of the oceanographic vessels. Bob Dinsmore once said when they are designing vessels that the prime importance now is comfort of the crew and the scientific staff, because he said they simply will not go to sea very much if it's very uncomfortable.

Hovey - Yeah.

Frank - And Bill Dunkle talked about the early days. He said we were always dirty. There was no water for washing or anything like that so -

Hovey - Yup. I'd come home with greasy hands covered with skin creases in black. Fingernails were always black.

Frank - Plus, you know, a lot of people will equate being on a vessel with maybe what a cruise ship is like or something like that. And I've had people like Steve Gegg tell me that you could actually run races across the tables in the dining hall by putting a coffee cup on one edge and the cup would vibrate across the table.

Hovey - Yup, it was an amazing vessel though. It had three great big outboard motors. One of them at the bow and two on the back end of the pontoons. As you approached the LULU by skiff or with the ALVIN, the ALVIN had to be driven up inside the LULU pontoons and you could see the big props trying to maintain position, these great big outboard props that weren't too deep in the water spinning around and you'd always imagine the sub getting tossed over and getting whacked by one of these big outboard motor blades.

Frank - Now you know we got into all this as we started through your career and you started off with Stanley. Just refresh my memory. Basically, what was it that Stan was interested in. What was his line of research.

Hovey - Okay, he was a marine microbiologist who was studying one-celled organisms that were unique to the marine environment, and there's a class of bacteria that he called or that scientists called nitrifying bacteria. Those organisms were able to build their cellular components by altering the chemistry of nitrogen compounds found in the marine environment. Nitrite and nitrate were converted to other compounds and in that transformation the bacterium was able to gain energy and build cellular components, survive and reproduce. These cells had unique cell walls which he studied with the use of the electron microscope.

Frank - Now was he what you would call a "pure scientist" or did he have some kind of applied thing in the back of his mind here.

Hovey - Initially I would say he was a pure basic scientist because this field was relatively new, nitrifiers, not studied to the degree that he did, but later on he got interested in components of the coelomic fluid of the horseshoe crab, initially to use as a test for his nitrifiers. My time with Stanley happened before this interest of his really mushroomed into the limulus lysate business and his applied scientific interests. I was there at the very beginning when we would go over to MBL where they had collected the horseshoe crabs for some of Stanley's MBL associates. We would go over to the supply room and grab some crabs and bring them over to the aquarium room in Redfield. To this day I can remember getting my pants soaked bending the tail portion of the horseshoe crab and with the most God-awful sized needle stick it into the tail joint and drain the milky colored fluid with a tint of blue into jars that his technicians up in the lab up in Redfield would then process. I've forgotten the particulars, but it was new wonderful science that Stanley was getting into and following that time period and learning all about his expansion into the lysate business you can see what a wonderful discovery it was for applied science.

Frank - It's interesting to hear that in the early years there was some kind of cooperative work done between MBL and WHOI, because that is not a common thing here.

Hovey - Yeah.

Frank - Now you switched from Stan's group. What caused you to switch out of his group?

Hovey - My original intent or the reason Stanley wanted me to come to his group was to be a microscopist, but as things worked out Brian Schroeder filled that position. So I helped him in the culturing side of his research trying to grow and harvest and prepare these nitrifiers to a point where he could use them with his electron microscope. At this time John Ryther was Chairman of the Biology Department.

Frank - Right from the start when you were there?

Hovey - Yeah, and I think Dr. Fye had already begun to plan the expansion of the Oceanographic to what is now the upper campus. Dr. Ryther had begun to enlarge the Biology Department. Gil Rowe, a benthic ecologist, was one of the new group of biologists. He had just post-docked at Duke I think. There was a well established benthic group at WHOI already, Howard Sanders, George Hampson and the Scheltemas. But it was important to John to bring in a whole host of new scientists, have them work up the scientific ladder and, hopefully, as WHOI expanded the Biology Department would expand. Gilbert came and had no technician to work with him. He was a dreamer. He had done some good work with his mentors at Duke and just wanted to carry along a lot of his interests at the Oceanographic. So he needed to enlarge his group. He became good friends with Stanley. Gilbert's wife played tennis at the Sports Center up near Highfield and got to know Stanley's wife, Margaret. So I guess Gilbert sort of said to Stanley that he could use somebody with SCUBA experience, a biologist who might have had a little bit of experience handling the kinds of gear that he would need to use. Stanley told him that he had a good worker he could borrow for a while and see how it works out. I met with Gilbert and we hit it off royally. One of the biggest attractions was his interest in SCUBA. He wanted to study benthic environments near shore and in the deep sea. He was interested in using ALVIN which piqued my interest right away. I loved to go on cruises if they weren't too long, still being a landlubber and having a wonderful family at home. So I've listed some of the things that he loved to do. He was also interested in the nutrients in the sediments. Again being an ecologist he wanted to study the relationships between the environment and the organisms that lived there.

Frank - He was really getting into applied stuff maybe.

Hovey - Yeah. Although there seemed much to learn about who lived where and why.

Frank - What period of time was this now, could you put a year on it?

Hovey - Yes. I worked for him 1972ish to 1979ish, a good seven years. We talked a little bit about the compacted bale solid waste project that he got involved in. But nutrients in the sediment and why particular organisms live in a particular area was a highlight of his interest. We used coffee cans attached to a crude mooring line with elastics to sample the particles that were falling down the water column. Later on we got a little more sophisticated than coffee cans because we later learned that currents in many environments move more horizontally, moving sediments sideways rather than dropping perpendicular to the bottom. There was an awful lot of transverse kind of motion so we had to make our sediment traps a little more sophisticated than just a coffee can which allowed some of the particles to wash back out again. We always took numerous samples of the bottom. The current workhorse of bottom sampling is the MKIII box corer. It was being developed in the early seventies by scientists at Scripps. He needed a corer to take a large sediment sample so Gilbert, drawing from his undergraduate experiences and studying some European scientific journals, designed a corer that used a pantograph closing system. He hired a local metallurgist in Forestdale to fabricate this box corer. His interest in SCUBA and ALVIN diving and the need to sample sediments by those means led him to redesign the Birge-Ekman box corer, developed in Europe, so it could be used by ALVIN and SCUBA divers. This corer was a stainless steel box slightly less than a cubic foot in size with a T handle that when twisted would release two spring-loaded jaws. The jaws would enclose the sediment sample within the box. The corer was easy to use by both SCUBA divers and the ALVIN. With special care when pushing the corer into the sediments one could extract an intact undisturbed sediment water interface which was very desirable.

Frank - Let me ask you a question on that. You know most people would say oh you're a marine biologist and it sounds very much like he was the first of the biological oceanographers or one of the first of that type that was looking at whole environments rather than taxonomic groups and things like that.

Hovey - I think it was a new endeavor. I think Howard Sanders was one of the pioneers. Gilbert and Fred Grassle who joined Howard's laboratory were the new young benthic scientists that were part of Ryther's department expansion who were going to carry on some of Howard's vision. Howard was

already utilizing ALVIN in a big project surveying the bottom from the Nantucket, Martha's Vineyard area to Bermuda. I think they called it the Cape Cod to Bermuda transect. The sub took photo after photo of the ocean bottom along the transect. Then all photos were analyzed to identify animals and relationships with their environs.

Frank - Even at that early period were the cruises and research that you folks were doing all biological or were you mixed in with geologists and other disciplines?

Hovey - Most of my cruises included scientists of many disciplines. The New York Bight cruise with John Ryther is the only one I can remember that carried only one group.

Frank - You know there has been a change in thinking on that over the years, probably since they found the vents down in the Galapagos when they had all geologists on board and no biologists. Plus over the years they developed whole new ways of thinking in terms of environmental studies where you had a number of disciplines all looking at the same area. Plus you know I'm gonna have you comment on that and I also want you to comment as you do that on the change in instrumentation that you've seen over the years, you know the refinement of and all that kind of thing.

Hovey - It's very true and I think expense plays a big role also. Cruises are so costly you want to get as much value out of that time period as you can. So you invite geologists, physical oceanographers, biologists, chemists to make up the scientific party to entertain as many of the interests in a particular area or regime so you can get the biggest bang out of your buck. Over the years I can remember many scientists trying to add small samples to our box corer frame in order to obtain information about the environment of our cores. For instance felt cloth in our corers so spiny carapaces would attach to the cloth. Niskin bottles were attached to close when we took our sediment sample so water chemistry people could look at the water two feet off the bottom.

Frank - You know it's really kind of a fascinating thing. I think it's the only time I've ever seen the bottom line of money actually work to the benefit of the development of a science. \$25,000 a day to run the ship, \$25,000 a day for ALVIN operations, so you put geologists, biologists, I mean it's necessary to do in order to find all this and yet that drove oceanography into this very strong interdisciplinary thing it's become. So it's the first time really that the bottom line has really turned out for the discipline itself.

Hovey - And that environment isn't just biology. It's all related so when you go to that one spot, man you want as many interests involved as you could possibly get.

Frank - You know it's interesting, Hovey, when you talk about CTD's and things like this. We talked a little bit about the development of instrumentation, you go from the point from where you'd use a Jeff Whitney calibrated thermometer to get a temperature. Now they do that all electronically and what happens or have you seen anyone that actually got caught in the bind where okay let's say something like the old standardized kind of reversing thermometer they could work with but when it switched to an electronic kind of means they were out of their depth and as a result that was pretty much their level of competence and they weren't going to go any further? I mean it happens to all of us, one way or another you know.

Hovey - Yes. I think it's been my experience if that happens to a particular group or individual they are wise enough to add new personnel to assist in transitions. They may not be able to do it themselves, but on numerous occasions I can remember new people coming in to assist a group to maybe make that next step to enhance a particular program.

Frank - Now you were on loan so to speak up to the late 1970's . What happened then?

Hovey - Well let me tell you a couple more things, wonderful experiences during my time with Gilbert. Another interest of his was how benthic organisms might be involved in the upwelling and El Nino effects off the coast of Peru. We participated in a number of cruises studying benthic organisms, pore waters,

and overlying water chemistry using a number of research vessels - EASTWARD, COLUMBUS ISELIN and the THOMAS THOMPSON.

Frank - And did you get a chance to go ashore also?

Hovey - Yes, a little in the port cities we visited. But you know I wasn't a strong adventurer. I had strong roots back home and a young daughter growing up so I might stay a day in a particular port but I had a hankering to get home, so I didn't stay too long in foreign ports. So there was all of that with Gilbert. Also Gilbert was interested in the Joint Program and assisting students get involved in biology. One in particular, Jean Nichols, was a cousin of Stanley and she got accepted to the Joint Program and succeeded in getting her doctorate here with Gilbert. She was interested in studying benthic organisms in stressed environments. One of her study areas was the Woods Hole outfall. We would SCUBA dive at this spot from a small WHOI day boat called NOBSKA. Secondarily treated sewage was pumped into the ocean through a one foot diameter pipe the end of which was held in place by a 5x5x5 foot cube of concrete. This block was about a couple hundred yards out from MBL's dock in Great Harbor. The materials that exited that pipe over the years had created a very stressed environment around the outfall - a perfect study area for Jean. On this particular day Gilbert, Jean and I gathered up our sampling gear to get a handle on the fauna living in this stressed environment. So we climbed into the boat and anchored it right over the outfall. It was very easy to find. Lots of the material coming from the outfall would float creating lots of interest from the local seagull population. We donned our gear and dove to our study area. I'm gonna back up a little bit back to my graduate days out at Scripps. Around Scripps are countless tide pools covered with a bounty of fauna and flora, wonderful places to just visit or study.

Frank - When we met last time we were going through your history here at the Institution and we had gone through the first two people that you had worked for and I found it interesting and I'd like you to continue in this same mode, is that you talked about the person that you worked for, you kind of built character sketches of them, you talked about some of the others and you talked about some of your experiences on board ship at that particular time. We got into some of the ALVIN experiences and all that kind of thing, so could we start at that point and go on.

Hovey - Okay, thanks Frank. I think we ended up last time talking about a particular experience when I worked with Gil Rowe. He was a benthic ecologist that came here in the early 1970's and was a member of John Ryther's expansion of the Biology Department through the 1970's. Gilbert's first graduate student was named Jean Nichols. She indeed was closer to the WHOI community than just being a graduate student. She was Stanley Watson's cousin. The Rowes and the Watsons became good friends. Jean was able to get involved in the MIT Joint Program that was in its early expansion and development here at the Oceanographic. She also, like Gilbert, was interested in the sediments and how they relate to the community of animals that thrive there or struggle there. She also developed an interest in a particular kind of animal that lived in the sediments called nematodes. One of her study areas, a stressed environment, was the Woods Hole outfall. It was a very good environment to study as an impacted area and study how opportunistic animals could populate these areas. On this particular day Jean wanted to take our small box corers down to the outfall study site and sample the bottom. We anchored the skiff and dove on top of the outfall. The three of us each had a particular job to accomplish. I had done my work and I was waiting for the other two members of the dive party to return and then swim up the anchorline to the skiff and return to the laboratory. As I was waiting on the bottom I noticed I was surrounded by small quarter size hemispheres of what I thought was a brown hollow alga. I didn't know if it was colonial but it was a half spherical alga about the size of a quarter and they were located all around me. My initial thought was it looked very much like the algae that lived in a tide pool environment out in the Pacific. When I was at Scripps we often went down into the tidepools and investigated the kind of animals and algal communities that could survive the crash of the surf. This algae was easy to spot because of its brown color easily offset from the greens and reds of a typical tide pool flora. Well I saw all of them around me but the question popped into my mind that we were in forty-five feet of water which was much different than a shore tidepool environment. What in the world were they doing here in the Atlantic in deeper water? As I waited for my divemates I took my finger and tried to scrape the algae off the bottom, but lo and behold it wasn't hemispherical it was spherical. It was just a round sphere and squeezing it I realized it was solid, not hollow and then the light went on. I wasn't lying down in a bed of

algae structures. They were actually balls of human waste that I was sitting in and that the primary system of dealing with the human waste in the Woods Hole area was not quite functioning the way everybody thought it should. And Jean and Gilbert were also going around sampling in this area. So after the dive we indeed processed our samples but only after taking long hot showers and scrubbing our equipment.

Frank - All the dreams of something Cliffordonia smashed at that point. Let me ask you a question along that line. You said that these were the early years of the WHOI-MIT Joint Program. Do you recall anything that prior to its starting or its inception of the kind of talk that was going on around the Institution, because it was controversial.

Hovey - Yeah. I was totally unaware of any controversy. Jean and Gilbert worked exceedingly well together and that advisor-student relationship was the only one I was close to in the early years of the program. I do recall a little stress developed when students couldn't decide between a joint degree or strictly a WHOI degree.

Frank - Just as an informational thing, there were some higher ups here that were definitely against this kind of connection and there were those that were very much for it. Arnold Arens mentioned to me that he fully believes the only reason he was made a Trustee of the Institution was because he was very pro this contact and they knew he would fight for it. So I just wondered sometimes if that kind of thing filtered down.

Hovey - In my foggy recollection I can't say that I recall anything.

Frank - Well I'm sure there were some growing pains during the early years as you say deciding whether it was going to be a WHOI degree or an MIT degree or an MIT/WHOI degree even to the point of whether it was going to be a WHOI/MIT or MIT/WHOI degree. I wasn't aware of the fact that they had that Joint Program for biologists.

Hovey - As far as I know, yes, I can remember Andy John, an early member of the program in biology. He was a Dick Backus student not necessarily just fish but fish and environmental considerations and it was that student that seemed to struggle with where the degree came from, jointly or was he just a WHOI awardee with his doctorate. I'm not sure I have all the facts straight, but I think that was the case.

Frank - Dick Backus didn't work on the ocean floor. He worked in a zone that was

Hovey - Yeah, I would say a water column ichthyologist.

Frank - Like down to 1,000 meters or something like that, the mezzopelagic zone. In those years between the principals was there much that you knew of where the very deep guys talked and worked with the guys that were medium depth and those that were in shallow. I mean was there any kind of give and take with them.

Hovey - I would definitely say yes. I got to know and work with Richard Haedrich because he and Gilbert collaborated on many projects. Richard Haedrich was an ichthyologist and interested in the bottom dwelling fishes and how they relate to the bottom environment. He worked with Dick Backus. He was a young scientist working up the scientific ladder and they worked an awful lot together, in the same lab for a long period of time until Richard got to the point where he had moved from Assistant Scientist to Associate Scientist and began to be more of his own man. George Grice was here at the Oceanographic and he wasn't necessarily an ichthyologist but a planktonologist, if that's the right way to describe him, and he was interested in the mid water column zone. There was a lot of Dick Backus, George Grice and Haedrich communication combining bottom and midwater interests.

Frank - So it really always has been then a place where the different interests have melded together?

Hovey - Yes

Frank - Was Bostwick Ketchum still around in those early years?

Hovey - Yes he was. In a later part of my WHOI life I worked for John Farrington, and Bruce Tripp was a technician in John's lab. Bruce is a great person and we got along well. Bruce worked with Bostwick when Bruce first came to WHOI. It was through Bruce I learned a little about Dr. Ketchum.

Frank - Okay, I'll let you go along now.

Hovey - Another wonderful experience in those Gil Rowe days - I've commented a little bit about our experiment out in Great Harbor dealing with the six bales of compacted waste. Even though John Dunlea died and we lost support for the project, Gilbert was still interested in what would happen with those bales in a nearshore environment. So periodically I would get fellow divers of mine and we would go out and check those bales of compacted waste. And I got to know and got to love a wonderful co-worker, George Hampson. We both had similar interests. We were both SCUBA divers. In fact I think he's part marine animal the way he is so comfortable in SCUBA diving environments. So he was a handy SCUBA diver that I would ask every once in a while to come help me. We adhered to the typical SCUBA diving code that you never dove by yourself, you always dove with a buddy just in case something goes wrong you've got help underwater in a potentially stressful situation and environment. So we got the WHOI skiff and we were going to go over and dive on the bales and another rule we had to abide by when we dove for the Oceanographic was we always had to have a skiff tender, not necessarily a diver, but somebody who would mind the skiff while we were underwater. Gilbert at that time had a summer student, a high school student. Her name was Erika, I can't think of her last name. But because she was in the group and handy I asked her to be the skiff tender while George and I went down and checked the bales. George Hampson is a little bit of a rascal, loves to play games and as we loaded the skiff and prepared to motor over to Great Harbor he told Erika that he was Dr. Paul Fye, the Director, and he liked to go out in different areas and see what scientists are doing here at his Oceanographic. Erika was a little naive and wide-eyed when she heard that she was going to go out on a skiff with the Director of the Woods Hole Oceanographic Institution. So George strutted about and sort of handled me as a little bit of a lackey, asking me to put his tanks in the boat and he really played it to the hilt and Erika was just overwhelmed by all of this. So it took us about ten minutes to motor out and anchor right where we knew the bales were and George and I started to get prepared to jump in the water. Back in those days we didn't have the kind of buoyancy compensators that we have now that attach to the tanks. In those days it was called a horse collar and it was nothing more than a heavy plastic bag that went around your neck and sat on the upper parts of your chest. It had a little inflating tube where you could take air out of your lungs and tank and blow it into the vest if you wanted to inflate it that way. It also had a CO2 cartridge so that you could pull a lanyard and inflate the vest. It wasn't a piece of gear highly thought of. It seemed to get in the way and it didn't take many excursions into the seawater before the canister got corroded or the little puncturing device that you pull got corroded and it was more work than value, but because it was required we always had to wear it. It is one of the first things you put on, then your weight belt, then your flippers and your knife and finally your mask and tank. The macho way to don our tank was to put our hands through the straps with the tank in front of us and then grab the tank and hoist it up over our head with the straps falling down our shoulders and settling the tank on our back.

Frank - A la Mike Nelson.

Hovey - Right. Exactly. None of this wussy stuff where you put one arm through a strap and reach around and get the other strap and pull it on your back. So George was doing that in front of Erika as Dr. Paul Fye, the Director of the Oceanographic. He was sitting on the edge of the boat and he picked up the tank it caught the horse collar vest and the momentum carried him right over the side. Of course, Erika's taking all of this in. George quickly surfaced sputtering because he didn't have his mask on and the mask was probably falling down around his neck. Spitting out seawater, trying to grab the edge of the boat, trying to grab his tank and everything else that might have been flying around he finally got control of the situation and looked up into Erika's concerned face. Erika looked at him and then to this day I can see her turning around and looking at me and saying "Hovey, is that really Paul Fye, the Director of the

Woods Hole Oceanographic Institution?" and then, of course, George had to fess up. But that wonderful experience remained in my memory since. George retired a couple of years ago and asked me to help with the retirement ceremonies at the 5th floor Clark, and I just couldn't help but expose him to the world with that particular story.

Frank - You know it's interesting when you talk about some of these people you were working with and some of the projects they have like this packaging of solid waste. I'm not sure most people that know of these big oceanographic institutions know of how much they do in terms of environmental concern and, you know, thinking of that packaging, thinking of the famous bologna sandwich and the fact that the Associate Director and head of the MIT/WHOI Joint Program, John Farrington, who you mentioned came from UMASS Boston where he was a professor of environmental sciences, plus they have the mussel watch and all those kinds of things.

Hovey - George and I for many, many years had a project at the Plymouth nuclear power plant because when that was built in the late 1960's early 1970's (I'm guessing at the date) just the fact that they were going to pump warmed seawater into the Plymouth nearshore waters - how was this going to affect local marine business. Raking Chondrus from the nearshore waters was still a big business at this time. Chondrus was a red alga from which stabilizers were extracted for ice creams and yogurts. What would elevated temperatures do to this alga. So the power plant funded Chondrus surveys for years to study how the alga managed in the altered environment. George and I set up a survey pattern in front of the plant and at nearby control stations and inspected seasonally for years. We found that the algae grew best in front of the plant. The warm effluent stunned smaller organisms that fell prey to larger animals setting up a well populated food chain. The nutrients from the food chain waste encouraged a rich growth of algae along the effluent axis. To my knowledge the surveys are still going on even though Chondrus is no longer raked. Synthetic stabilizers have been developed for the food business.

Another wonderful character I got to know over the years was the skipper of the ASTERIAS, Dick Colburn. He was a wonderful mentor helping us study nearshore environments and how to deal with unexpected problems that might develop as we investigated our study areas around Woods Hole. He lived up in Quissett and he would drive to work along Buzzards Bay. Looking out onto the Bay he could judge whether it was wise to take the ASTERIAS out. Gilbert and I had planned on doing a SCUBA diving trip out in Buzzards Bay this particular day and we were young and healthy and strong and maybe full of ourselves a little bit more than we should be. We had just invested in dry suits so we were eager to test them out. They were big bulky things. There's a picture of Gilbert and me standing by the Redfield parking lot where the ASTERIAS parked, standing with our new suits on and just posing for the whole world to see. Whenever we would use the ASTERIAS it was useful to discuss the trip beforehand with Dick. On this day he was discouraging. He said as he drove in he saw whitecaps and the wind direction was poor where we wanted to go study, but we were young and full of it. He wasn't adamant. He didn't say no, he just said well I don't think you should go. He said the boat was available for the next few days so why not wait for better weather. Gilbert and I would have no part of that. We were ready to go gather up our gear. It takes about thirty minutes to go over to the dive locker, suit up, get our tanks and equipment and cart it back over to the ASTERIAS. In that thirty minutes Dick Colburn had lit up his pipe and the cabin of the ASTERIAS was blue. The cabin itself I'm going to say was twelve feet deep from the stern part of the cabin to the bow end. And as we went through the door we had trouble seeing Dick because of all the pipe smoke. Anyway we tossed our gear aboard. He fired up the ASTERIAS, headed out Eel Pond channel over to the Woods Hole Passage and, I must say, Gilbert and I recall that it was getting pretty bumpy even in the protected area of Great Harbor and the approaches to Woods Hole Passage. In that two or three minutes going from the Eel Pond drawbridge to Woods Hole Passage Gilbert and I were already green not only from bouncing around but more likely from breathing blue smoke. By the time we got out into Buzzards Bay we were pleading with him to turn back. We had a great ASTERIAS trip two days later.

Frank - I've known very smart captains, but that size vessel, those kind of conditions to run the vessel in the trough of the waves just to give people the right attitude.

Hovey - Okay moving on. During Gilbert's years he had a wonderful well-funded project with Richard Haedrich as a co-investigator. We studied zonations of deep ocean animals along depth contours of the shelf and out into deeper water. So we had a wonderful series of cruises utilizing a number of ships, the CHAIN, the A II, once with GOSNOLD and finally the KNORR. When WHOI acquired the KNORR we used it a number of times inviting numerous scientists along if they were interested in working with bottom animals. Once John Stegeman, a young scientist in the Biology Department at that time, came along because he was interested in some of the biochemistry of some of the deepwater fishes. The main piece of gear we used was a forty foot Gulf of Mexico trawl, which meant forty feet wide at the mouth with two great big steel doors like the commercial fishermen use. The way the doors are attached to the bridle that comes back to your main trawl wire and the net the doors have a tendency to flare out helping to keep the net mouth open. Small floats keep the top of the net up while light chain keeps the bottom of the net opening on the sea floor. Early in the projects we sampled south of New England along the 200 meter contour. Then later cruises we moved along deeper contours, 500, 1,000, 2,000 on down to the 5,000 meter contour. Now this was a big net, I'm going to say not only forty feet wide but maybe a hundred feet long with a cod end in the order of twenty to thirty feet in length and ten feet in circumference. So you can really, if you're successful, get a load of animals which all had to be identified, counted, select numbers preserved for more study back home. It was a very labor-intensive project so we tried to get as many students and scientists as we possibly could to go on these trips. And they were wonderful trips because sometimes we'd go through a community of Geryon, which was a red crab that, once we counted and weighed the biomass we would ask the steward to cook up and we had steamed crabmeat that just tasted out of this world. And if you were in the particular zone where these crabs flourished you could get an awfully big net full and we always looked forward to the particular environment where they were living. The trawling incident that I love to tell was one when the ATLANTIS II was still a conventional oceanographic vessel before it became the ALVIN mothership. We had made this exceptionally good collection and the boatswain on board the A II at that time was Eddie Pierce, a wonderful old long-time WHOI employee and an excellent boatswain on the ATLANTIS II. He always made himself available in case we needed him, but allowed us to do the work the way we wanted to and Richard Haedrich, Gilbert and I were relatively experienced in using the gear having made many very successful trawls. On this particular haul we had a wonderful cod end loaded with animals. You could see the bottom fishes and the crabs and the brittle stars, but for some reason the net seemed exceedingly heavy this time. This became apparent as the crane picked up the net so we could release the cod end we found it very difficult to control the cod end bag suspended in air. We finally succeeded and a great explosion of animals and everything came out into the holding area on the deck of the A II. But included in the collection was this fifty-five gallon shaped blob of something right in amongst our animals. It didn't have the edges of a fifty-five gallon drum that you could see, but it had the rings around the middle that instantly made us think of a fifty-five gallon drum. As we poked it it wasn't steel and it had a particular odor that none of us could identify at that moment. It was lying on its side so we just kind of secured it there. It was rigid. We went about our business of processing the animals. It was a warm day and the odor of this particular material started to get stronger and stronger and it began to lose its cylindrical integrity. Well the odor was stinky enough that it drew our attention away from our business of dealing with the animals. And we kind of looked at this fifty-five gallon drum blob. It was no longer cylindrical and was turning into a mound when the light went on in our minds that what we were smelling was creosote. We had trawled up an old discarded fifty-five gallon drum of creosote, but because of the cold temperatures in the bottom of the ocean the creosote had solidified while the drum rusted away. We hauled it up into a warm temperature environment and as the creosote started to warm up it began to turn into the liquid form. And all at once here's fifty-five gallons of this material starting to spread itself out all over the A II deck. Well it was beginning to contaminate all our animals so we started to scoop up and quickly got dust pans and shovels to dump it over the side. Have you ever tried to shovel syrup over the side of a ship on a windy day? We were splattering creosote all over the decks and bulkheads. So we went and got Eddie. Eddie Pierce came out, saw what we were into and he asked science to please go inside. He got a whole bunch of crew members and with solvent, soap and hot water they were able to clean up the mess that we scientists had made.

Frank - You led beautifully into a question that I was going to ask anyway on this, only your's was with the creosote and I could just picture this tarring the decks down there. When you talk about a trawl like that forty feet by maybe a hundred feet loaded with sea life and other ephemera that you pick up on the

way in, this presents an enormous amount of weight, an enormous strain of equipment. It's in a corrosive environment, the saltwater environment. So when all this stuff comes back on who is responsible for making sure the winch cables are still in good shape, that there are no holes in the nets, that corrosive saltwater is taken care of, all that sort of thing?

Hovey - The actual equipment that the scientists bring aboard are their responsibility. The ship's components of any work being done is the responsibility of the ship. Right now I cannot think of any incident where ship's equipment ever let us down. Once in a while gear that science was responsible for failed because of corrosion, being dirty, not being lubricated or not being flushed with freshwater and dried. Later on in my WHOI experience I became intimately involved with the MKIII box corer. Both biology and chemistry had a great use for this instrument that you would try to gently set on the bottom and sample soft sediments. This was not a hard bottom sampler, it just wouldn't work. But for soft bottoms, it performed wonderfully if it was cared for. It had moving parts that had to be properly lubricated. If you let seawater wash out the lubricant, metal to metal connections would freeze up. If a cruise depended on a particular piece of gear and it wouldn't work because of poor care there was hell to pay. The very first one I worked with was one that John Farrington bought early in the 1970's. It was galvanized and it is still now taking samples to this day. It is a piece of gear that falls within Barrie Walden's Seagoing Science Services Group, and still remains on John's property list but is cared for by Barrie's techs. Users will request the gear through the SSSG group and, if available, will use it on projects. Over the years we have purchased three more. But because they weren't initially galvanized and I think constructed with poorer quality materials it is taking much more of an effort to keep the corers in working shape.

Frank - Had this always been a part of your job? You had to keep up with the science but you also had to learn new equipment, how to rehab it, sort of the nuts and bolts mechanics of the whole thing?

Hovey - I think when I started working for Gilbert and through much of my WHOI career it just so happened that I worked for scientists, I think when they were children their mothers never let them get dirty very much, could not play in mud when they were kids. When they grew up and could have some influence over their own lifestyles and got into science they figured - man I need to get some of that good deep gunky bottom of the ocean mud. The particular pieces of gear that I've been closely associated with over the years were designed to bring back that kind of material. I have cared for other kinds of gear and it is true that with a little TLC instruments will perform and you will prevent the wasting of time you generally don't have on a cruise.

Frank - And very expensive

Hovey - Yes indeed.

Frank - And the equipment isn't cheap either. One of the things I don't think people see is that when you're in an ocean environment it's almost like being in space. I mean you have to have very, very specialized equipment that takes a certain kind of punishment from the environment that it's in and they think of the scientists or the scientific technicians as people that are into their science, which is very demanding, and nothing else. But there's more to it than that.

Hovey - Let's see, continuing on with my tenure with Gilbert. Another funny experience. I love to talk about the effort that the Port Office puts into providing the very best crew members on our ships - wonderful workers dedicated to helping scientists accomplish their missions. Another side of going to sea is the marvelous steward departments that they have on our ships. I cannot recall ever getting off any WHOI ship at the end of a cruise where I haven't gained a number of pounds because of the incredible meals. Once in a great while you get just a straight meat and potatoes cook and that can get a little long. But in I'm going to say ninety-nine percent of the cruises I've been on the stewards department do their utmost to please and satisfy the oncoming scientific party. There were special occasions where we'd have cookouts aboard our ships that were exceedingly special, crossing the Equator was a most wonderful happening. Back to the story - on this particular day it was lunchtime on the KNORR and we were all kind of giddy and happy because of the success of our sampling during the morning. A favorite

entree at lunch this day was American chop suey and all four of us at the table were devouring a big plate of it. We all noticed that Gilbert seemed to be taking an awful lot of time chewing this particular mouthful of food and, again, it was American chop suey, something that could easily be chewed up and swallowed. As he chewed and chewed more and more of us stopped eating to watch as he dealt with this mouthful. Finally he stopped chewing realizing that he couldn't chew up this item and spit it out onto his fork. It was a used bandaid. Everybody looked at it, stopped eating the delicious but tainted chop suey and got up to search out some dessert. Gilbert was very good about it, didn't make a scene and we all took our dessert out to the fantail and continued our conversations. That's one of the few times that I can recall an unfavorable experience with food on one of our ships.

Frank - That would be tough. What's an Equator crossing like?

Hovey - Ah man it is just a marvelous, marvelous happening where the experienced "Equator crossers" have an opportunity to initiate any crew or science member to the joy of crossing the Equator if they haven't done it before. It is a time-honored tradition and carried to great extents on WHOI ships. I've only crossed it once as a polliwog, subjected to this indoctrination of crossing the Equator. It is a variety of events ending with a big party. We had to put on skits. We had to wear costumes. Each one of us had to kiss the belly of King Neptune and his attie and body coverings were the most despicable, odorous, stinky, gunky that you could imagine in your wildest dreams. And the experienced Equator crossers who knew secrets about the polliwogs would compose notes to be shouted out as each one of us had to go up and be cuddled and kiss the belly of King Neptune. And we had to perform our skits in order to pass and become whatever the term is, it escapes my mind, that you are when you have gone through this ordeal. But the culmination of the wonderful event is a cookout and party on the fantail that would knock anybody's sox off. And Gus, I've forgotten his last name, was the steward of the KNORR on this trip and he presented a meal that was just stupendous. It just was a wonderful experience and I've got my diploma, proof of enduring this experience, stuck up in my den and I'll cherish every memory of it.

Hovey - During the time I worked for Gilbert, after I worked for Stanley, the Oceanographic began to enlarge and I'm not sure of the facts but as we were growing there may have been OSHA requirements that the Oceanographic put some effort into medical considerations. The Oceanographic could have someone like a full-time nurse available for potential accidents, or invest in some other program. WHOI convinced OSHA that they would teach as many employees that wished to learn first aid and CPR. I was asked along with three other employees at that time - Bob Hindley, Pam Bowman and Lois Toner - if we'd be interested in becoming CPR instructors. The American Heart Association was beginning to expand its program to educate the population on the early intervention of CPR for victims experiencing heart attacks. So the four of us became CPR instructors and began a teaching program here at the Oceanographic. Bob Hindley, being a member of the services group and a call fireman EMT for the Town of Falmouth had already initiated a first aid program for the Institution by inviting Red Cross instructors to speak about first aid to the employees. In its early stages it was only a Girl/Boy Scout level exposure. However, interest in CPR really took hold and we put together a very nice CPR program that is on-going to this day. Because I was a part of that program I have a warm spot in my heart and am very proud of what the CPR program has become. Another subject totally unrelated that I just wanted to touch on for my oral history was my involvement with Bruce Crawford, then Director of Personnel, to encourage African Americans to consider coming to WHOI as an employee or to join the Joint Program. We visited colleges in New Jersey, Virginia and Maryland five or six trips over three to four years. We didn't seem to be very successful at that time and we speculated that the students we interviewed wanted to enter fields that offered a quicker source of greater income.

Frank - Well maybe because, Hovey, when you came into the Institution you were one of the first of the crew that you didn't have to be a wealthy young man in order to be in the field of oceanography. I mean heavens the corporate portfolios of the original oceanographers were just absolutely amazing. And you came in in that early part where you gave up some money for a quality of life kind of thing. I'm going to ask you a little bit about that later.

Hovey - Okay. A wonderful seven or eight years working for Gilbert, but he was a member of this group of biologists John Ryther brought in trying to expand the Biology Department as the Institution

began to grow. In particular I can remember associating with a number of wonderful biologists. In particular I remember Ken Tenor, Ed Carpenter, Tony Remsen, Gilbert, Ken Smith, Fred Grassle, Richard Haedrich, Peter Wiebe, but in the late 1970's John Ryther stepped down from being the Chairman of the Biology Department and George Grice took over and brought a new way of looking at the growth of the Oceanographic and perhaps thought that it was expanding too rapidly. This group of young biologists climbing up the scientific ladder had gone beyond Assistant Scientist to Associate Scientist and had been granted a number of years at the Associate Scientist level. Now a considerable group of them had to be considered for tenure. To tenure all these fine scientists was viewed a bit differently by Grice than by John Ryther. So other than Fred Grassle and Peter Wiebe all of the rest (one of whom was Gilbert) were invited to leave the Oceanographic. They did not gain tenure and had to move on to other institutions. Gilbert was able to get a good position at Stony Brook on Long Island. I'd put an awful lot of Hovey into the Oceanographic. I wasn't just an eight to five man. I was a 7:00 to 5:30, 6:00 o'clock man. I joined committees and regularly taught CPR. At times when I felt projects should not be charged for my extra activities I would use vacation time. I really thought I was making a name for myself as an excellent technician and company man, so the worst time I've ever had at the Oceanographic, the most trying time, the most hurtful time is when Gilbert and Richard had to move on and I stayed. My roots were here. I didn't want to leave WHOI so I went to the Biology Department and asked if they were aware of any support I could seek out. I got the feeling they didn't really care. They essentially said, "nothing here, you're on your own". I never let it bother me later in my WHOI life. At the time I was hurt feeling my dedication during my first ten years was worth a little more consideration. Well fortunately I had worked with John Burke a little bit on a couple of committees. He was a research specialist for Vaughan Bowen who was a scientist in the Chemistry Department and had a large staff working with him, a wonderful group of people. This group became my first real WHOI family. Stanley and Gilbert had great people working for them but I never gained that family feeling. I'd gotten to know some of the people upstairs. The Biology Department was on the second floor of Redfield at that time. Chemistry Department was on the third floor so we crossed paths numerous times and I'd gotten to know John Burke fairly well. He stopped me shortly after Gilbert left as I was cleaning up a few things and said "Hovey, why don't you go up and speak to Vaughan and see if he might help you out. He's always looking for weak-brained, strong-back persons to work the black barrel component of his research. His main bag was studying naturally occurring radionuclides in the marine environment, both water column and sediments. So their typical cruise would entail taking countless numbers of black barrels that maybe hold thirty gallons of seawater and filling them up with water taken from different levels of the water column. These radionuclides were in such small concentrations that you had to get a large volume of the water and go through a whole series of precipitation steps to collect the radionuclides. John had invented a sphincter corer which could be used to get a relatively undisturbed column of mud in soft sediment bottoms and the lab would try to extract similar radionuclide species from sediment subsamples. I was pretty unfamiliar with this particular kind of chemistry, but my main job for the next three years was to help the technicians deal with these large volumes of water in the lab and on many cruises. Vaughan was also interested in the sediments not only oceanic sediments but also lake and pond sediments throughout the United States. The early A-bomb tests in the midwest, because of the fallout and then sedimentation, placed a time line in the sediments of all lakes and ponds throughout the United States. One would always know where in the sediment column you were because of this marker. We traveled to many lakes throughout the United States using a trailered collapsible catamaran as our vessel. When at a sampling site we would put the catamaran together. It had an open portion of deck where, with a gantry and small winch, we could raise and lower the sphincter corer rig. It was a very effective coring operation over soft sediment bottoms. We sampled lakes in New York, North Carolina, Utah, Colorado, Idaho and Oregon - also lakes in numerous National Parks.

Frank - I'm very curious about two things. I don't think you've made as strong a case, you must have been crushed when this happened. I don't think you were just well I've got to find something new. I think you were really crushed.

Hovey - I was.

Frank - Did you get caught. You know, the WHOI Biology Department is not the biggest department and some of the others like geology and geophysics and engineering have grown and grown and grown and did you get caught in something here.

Hovey - I think so Frank, I really do. Whether it's a fact or not I felt that it was a numbers game, that the department didn't have the capacity to pick up Pamela Polloni, who worked for Richard Haedrich, and me. She was an exceptionally good technician and I kind of thought I was too, not just to the Biology Department but to the Oceanographic as a whole, because we had spread out our efforts. We had become not just Biology Department members but members of the greater WHOI community and I can recall being a member of conservation committees, graded employee committees, putting my efforts into teaching CPR and first aid, and I guess it was a crunch time period and the Department if they tried, see I don't even know if they tried to look for some bridge time with another scientist. Howard Sanders, George Hampson, Fred Grassle and a couple of other lab members made up a strong benthic ecology group already situated at the Oceanographic and they probably could not have added Pam and me to their group. But, again, I thought Pam and I were sharp enough that we could have gone elsewhere and provided a good support for some other biologist.

Frank - Certainly your being awarded in your later years, the Vetlesen Award in terms of a true WHOI person, essentially what that's about has proven that to be true. When you were, I guess you would consider fortunate to switch to the Bowen group at that particular time, was your salary still at the same level?

Hovey - Yes.

Frank - Okay so there was no cut in salary.

Hovey - No cut in salary, no. That was a big, big benefit for me. Bowen didn't socialize with his WHOI family all that much, he was sort of the Daddy or the Grandfather. He went on very few cruises. What he did best was sit in his office and write successful after successful proposals. He supported twenty-five people for many years. I don't ever remember anybody being fired. If he liked you, you had it made. He was a little tough on graduate students. But technicians, if he liked you he would take care of you. I'm still close to Pam Polloni. She left the Oceanographic after Richard and Gilbert did not get tenure and occasionally helps the Town of Falmouth in scientific-related ventures. But I lucked into this group, Vaughan Bowen's group and indeed that's where the familiness of the Oceanographic engulfed me. A wonderful bunch of technicians that lived and worked in spheres that I participated in, not that we were great socializers, but getting down and dirty on our cruises, our trips out west, working in the laboratory, we all pitched in, everybody would do their part and that became very, very clear to me right off the bat. They took me in, cuddled me, showed me what they'd like to have me do and were always there to help me should I struggle with any part of the chemistry. Certainly I could deal with vats, adding chemicals to precipitate components, back and forth until thirty gallons of water was reduced to milliliters of sample to be analyzed. I worked with this group for about three years, a marvelous association.

Frank - How long did it take you to get a feeling of security in your job after this?

Hovey - Two weeks.

Frank - That quick.

Hovey - That quick. And it was because of people in the group. I had gotten to know them over the years but never really close. That changed dramatically. These friendships have lasted for the rest of my life. A whole host of people, Brenda Olson, Charlie Olson, John Burke, Will Clarke, Don Mann, I could list a whole load of them, close friends that, even though Vaughan Bowen retired in 1982 and the group had to separate and look for job opportunities elsewhere, the nucleus has remained together. Even though we're in different labs in the Oceanographic, outside it we've remained close and come together every Friday at 4:00 o'clock to sip a brew or two and talk science for maybe five minutes, but the next fifty-five minutes or so gossip and talk about WHOI life. And it started, in fact it was going on when I joined the

group and it just brought me in, and, even though Bowen has long retired, the nucleus of five or six of his group remain to carry on that tradition and meet at 4:00 o'clock every Friday. Now we do it at CRL. Daylight Savings time we meet at the picnic benches outside of CRL. It's a tradition established way back in the mid 1970's or before, 1979 was when I got involved.

Frank - Now it's interesting as a young technician if your wagon got hitched to the wrong star you could be in some difficulty employment-wise. When does the point come when you have enough reputation in the Institution so that if that star flames out they're going to find you another place?

Hovey - That didn't happen for me until I worked for John Farrington for seven or eight years. He decided to leave the Oceanographic and go to UMASS Boston in the 1980's. Because of maybe establishing my name at the Oceanographic, two scientists picked me up half time, Cheryl Ann Butman in the Biology/Engineering Department, and Dan Repeta in the Chemistry Department. With Cheryl Ann I had some expertise to offer. With Dan a little bit but not as much as for Cheryl Ann. I have always loved organic chemistry and had worked with John Farrington in organic chemistry hydrocarbon chemistry, so I had picked up some expertise to bring to Dan's job. Dan was a pigment specialist. He would find pigments in the water column and in the sediments. After some preparatory chemistry he would analyze the samples by combusting them to reveal a particular spectrum depending on what pigments were in the sample. I would sample the water and sediments of Oyster Pond, perform some chemical manipulations and arrive with a sample to inject into Dan's combustion chamber. So here were two people who appreciated that I could help them to some degree and supported me between John Farrington and my Port Office - SSSG job. In the early 1990's four more benefactors saw me as an asset to the Oceanographic and created two positions, half time each. I became a Seagoing Science Service Group member for Barrie Walden and a Dock Master for the Port Office. This foursome included Barrie, Dick Dimmock, Joe Coburn and Barbara Wickendon.

Frank - How many years did it take you to get to that point, Hovey?

Hovey - Twenty.

Frank - You know, maybe you can comment on this. Maybe you don't want to comment on it, but it seems to me with a Master's degree from Scripps Institution, huge amount of background and this both on the technical end, everything from deploying to recovery to doing some analysis that there must be a better road for guys like you to follow, you know. I mean this is not an advertisement for a young guy right out of college to come and be a technician.

Hovey - Well, you know, I've been thinking if you made me Director I would somehow find funding to support qualified employees from one job to another and save a lot of heartache.

Frank - That was a trying situation.

Hovey - Yeah. Was I going to be pushing a broom in Falmouth High School the next day. I think Bob has discretionary funds to bridge scientists. I, as Director, might try to have funds for the technical level and even graded levels when graded employees are getting bumped for one reason or another, lack of funding, scientists not being able to get established here in a tenured position, and they have to, if the departments don't help them out, go through a period where they could get support from the administration to bridge them to the next source of support.

Frank - See I wouldn't want people to think that you know we keep mentioning the term "scientist", that is the peak of the pyramid, no two ways about it. However, I wouldn't want people to get the impression that the levels below that were not professional jobs and that you know when you face those situations your whole professional image of yourself and when you talk about maybe pushing a broom in Falmouth High School the next day, your whole professional image of yourself suffers, but that's gotta be a really tough time.

Hovey - It is.

Frank - And I'm not sure whether I would take someone, young fella, young lady and say this is what you face. I mean it's the whole bit. I taught marine sciences because it gave me a certain secure income over a lifetime and the other stuff was all gravy. That's a little better situation than what you were facing, you know.

Hovey - Yup.

Frank - And yet you never lost your love for this Institution in any way, shape or manner.

Hovey - That's right. And a big part of that as I said at my retirement party, it was the people of the Oceanographic that pulled me through, the associations, friends I made, that carry forth to this day. Why do I like to come back here, give tours, still teach CPR, mess around on the dock keeping Barrie's box corers up to snuff. It isn't giving the tour or getting my hands dirty with the pieces of gear. It's association with those friends, those co-workers that was it for me and still is.

Frank - There is something special going to sea with someone and working with them isn't there.

Hovey - Sure is. When you're side by side over the rail, let me tell you, that other person becomes a part of you. I don't know a better way to put it. I would live and die for many of my buds, my co-workers.

Frank - That's your generation and earlier. Do you think that's still going on?

Hovey - I don't but maybe it's because I'm not as intimate with newer employees as I was with my contemporaries. My tendency is to say I don't see so much of that. On the other side of the coin I am witnessing a close working relationship between the new and experienced ALVIN pilots. But in general I do not see in the current working environments large groups developing close bonding and thinking of WHOI as one big happy family. And maybe part of that is because we've grown so big.

Frank - Pretty good. Do you want to hold it for today there.

Hovey - Wonderful

Frank - Hovey, we're up to our fifth tape here now and I continue to be interested in everything you've been talking about. We've only gone part way through your job history at WHOI so I'm going to let you pick up from where we ended last time and just continue on with it.

Hovey - Okay, thank you Frank. I think we ended up sort of in the middle of my time period with Vaughan Bowen and the chemists. At that time his lab was located on the third floor of Redfield. He had a large group and, forgive me if I forget some of the story I told last meeting and repeat myself. His bag was natural occurring radionuclides in water column and sediments so whenever his group went to sea they would collect water in large I'm gonna guess thirty gallon black barrels, so he was thought of as the black barrel scientist. Ships would return to WHOI with the decks covered with black barrels. The main sampler was a large aluminum cylinder called a Bodman bottle. Once the bottle was lowered down the hydrowire to a planned depth a messenger slid down the wire to release two stoppers that enclosed the water within the bottle. The Bodman bottles worked very much like Niskin bottles but were much larger. Bowen needed large volumes because of the low concentrations of the radionuclides he was after.

Frank - May I ask you a question. When you go on board a vessel due to depart on a cruise, you can hardly move around the deck because there are so many things stored in so many locations. Who makes that decision? How does all that get set up?

Hovey - Initially it's worked out with some representative of the Port Office and the Chief Scientist. And this may occur a year before the cruise. Depending on the other scientists who are going to be involved and the kind of work they want to do, plans are made to divide up every square inch or square foot both in the labs and out on the decks to make the cruise work the best for all people involved.

Frank - Now does it ever happen that everybody has to sample the same station?

Hovey - Sometimes it works out that way. Some of my early cruises, in particular the early biological cruise that I went on the ATLANTIS II before it became the ALVIN mothership, John Ryther, Chief Scientist, brought the majority of the Biology Department to investigate the New York Bight area. He, working with the ship Captain and the Port Office even before the cruise happened, I'm gonna guess months, would plan out the cruise, who was going to come along, the particular latitude and longitude of each station, and a cruise plan that would set up a routine of sampling at every station. The water people, the sediment people, the plankton people, the microbe people - they all would take their turns on the wire and get their samples. A slightly different routine was employed when the ALVIN was part of a cruise. No wire work was conducted during the day where the sub was on the bottom. Conventional oceanographic work was done once the sub was on board generally a few miles away from the dive sites. The night work generally had some relationship with the aim of the sub work. Some cruise routines required the ship to move from site to site or tow gear from spot to spot or stay exactly in one place above the ocean bottom. Of course the deeper the water the greater the difficulty to sample an exact spot of ocean bottom. Much of my benthic work used the MKIII box corer. Oftentimes we sampled in depths of 4,000 to 5,000 meters and our ships were exceedingly good at holding stations. This involved balancing surface conditions with water mass conditions to give the scientist the very best chance of hitting that small area on the ocean bottom. Then you don't know wire angle. The wire looks like it's going real perpendicular to the bottom but who knows what's happening to that wire angle once you get a number of meters below the level of the sea surface.

Frank - They almost all develop a catenary.

Hovey - Right. So you do the best with that. Sandy Williams in the Engineering Department designed a pinger that we actually attached to the box corer. It had two different ping rates. One ping rate would give us a trace on the ship's depth recorder that indicated height of the corer off the bottom. So if there was a catenary in the trawl wire it didn't matter. We always knew when the corer would engage the bottom. A second ping rate occurred when a small stirring magnet was extracted from the top of the pinger. We would tie the magnet to a moving part of the corer when the instrument took a successful sample of the bottom. The second ping rate would shift the depth recorder trace across the page so we always knew when we had taken a bottom sample. No shift meant no sample. So we would raise the corer fifty meters off the bottom and try it again.

Frank - You know it's interesting, very few people not involved in the field recognize number one how difficult it is to locate yourself and number two how incredibly important it is to know exactly, precisely where you are. I mean our whole theories of seafloor spreading and the aging, if they didn't know the direction of those rocks down there and we're talking about something that could vary by two or three inches which would throw all your calculations off. It's that engineering part of it that just really kind of amazes me.

Hovey - I believe many of the Oceanographic successes are due to the fabulous engineering experts we have at WHOI. Many of our scientists know what they wish to study but don't have a clue as to how to accomplish it. There is great collaboration among the scientists and engineers and incredible instrumentation is the result.

Frank - Well the scientific end can only go as far as the instrumentation it has for the accuracy it's going to give them. Now essentially someone's going to say well heck Hovey all you had to do was chuck a barrel over the side. Take me through that. First of all was there any worry about contamination with the barrels. I mean did they have to be cleaned beforehand? How were they hooked down, how did you get them unhooked, how did you get them over the side.

Hovey - Let me finish up my thoughts on this pinger that was so important for so much of my bottom work. We knew exactly where the box corer was in the water column, and remember we didn't want to ram the corer into the bottom. Many of the scientists were interested in the sediment water interface

along with a couple of feet of the bottom sediments so we had to set the box corer on the bottom as gently as we possibly could. A bow wave in front of the corer would blow away all that interface. When we were close to the bottom we would get the winch to pay out one or two cable meters per minute and that's very slow. We would follow the meeting of the corer with the bottom by watching the two traces on the depth recorder, one trace of the pinger on the corer, the other the reflection off the bottom. When the two traces came together we knew we were on the bottom. We would let out a couple more meters of line, stop, then begin to haul back slowly. If all went well the magnet would be pulled out of the pinger changing the ping rate. Our trace would shift across the page and we knew we had a successful deployment.

This pinger greatly increased our chances of obtaining successful cores. Pre pinger days we had to guess when the corer was on the bottom by comparing the amount of wire out with the known water depth. We would pay out extra cable depending on wire angle and any guess about catenaries. Imagine our disappointment in those days when we worked in deep water, took two and a half hours to run the corer down and back and then brought the corer aboard still open because we never touched the bottom.

While we're on this subject I'd like to comment on how wonderful our captains and mates were in trying to maneuver our ships to have as little wire angle as possible during our deployments.

Frank - It sounds as you describe this I'm sure people that will listen to these tapes will think of a stationary platform sitting up there in the water. What kind of problems occur when you start to get fifteen, twenty degree rolls?

Hovey - Two major problems come to mind right off the bat. In poor conditions can you control your gear while it's swinging in the air as you deploy it over the side. Secondly, is your gear robust enough, cable strong enough and terminations strong enough to withstand the stresses of being yanked through the water column as the ship rocks and rolls. Safety comes first and the bridge will decide whether science can work or not. They also help by maneuvering the ship in rough conditions and suggesting fantail or starboard side deployments if that is an option. They can provide more crew to handle tag lines to assist overboarding and retrievals. It is up to science to bring the proper equipment to accomplish their scientific mission.

Frank - At a cost of about \$25,000 a day to run one of those vessels to reduce by an hour your getting your instrumentation on the bottom and back up again is an enormous saving in terms of money. Now you've got these barrels. Take us from that point what you're going to do with them.

Hovey - The Bodman bottle was a great big aluminum cylinder with stoppers on the top and bottom. As the bottle went through the water column in the open condition water would flush through the cylinder. When you got to a depth of water that you wished to sample you stopped the winch and slid a messenger down the wire to hit the bottle. That impact released lanyards that freed the stoppers to enclose the water inside the bottle. The Bodman bottle could fill two black barrels, so I'm guessing sixty gallons, you could fill two thirty gallon black barrels. One barrel was analyzed in the lab and the second thirty gallons was stored for backup. It was a labor intensive job. You needed trawl cable rather than hydro cable to deploy the bottle, the difference being half inch versus quarter inch. We had a special frame attached to the side of the ship to capture the bottle. We could detach a full bottle and then attach a second bottle, send it down to another depth while draining the first bottle. So we could collect maybe, depending on the length of the cruise and how many depths at each station in the water column, a couple of hundred black barrels. When we returned home we would fit six barrels per pallet so it didn't take too long to fill the GEOSECS holding building on the upper campus with a multitude of black barrels. But that was sort of the short time frame part of the whole experiment. The thirty gallons were brought back to the laboratory, placed in large plastic vats that could hold the whole thirty gallons. We would process eight black barrels at a time. It took us a month to get those eight samples to a test tube amount of material through chemical additions and precipitations to finally arrive with a sample that was analyzed in a radionuclide detector. It was a long involved process. I joined this group in 1979 and worked until 1982. Vaughan Bowen had been at the Oceanographic quite a few years before I ever got there in 1969 and I'm not sure how long he had been sampling the ocean in the black barrel mode, but from 1979 to 1982 we were

approaching black barrel number 2,000. He was the leader of a large group of employees, a well-knit family type of organization. He did all of the proposal writing, went to sea once in a great while but was so confident in his people that he would tell John Burke, or any member of his group, here's what I'd like, go ahead and do it for me. And his technicians performed exceedingly well. Not only did his workforce deal with water samples but also tissue and sediment samples. He held that great group of scientists and technicians together with his creative proposal writing for twenty to thirty years and I was fortunate to be a part of it for three. As we processed barrel 2,000 we had a joyous celebration and put together a time capsule to be opened on year 2,000. As I've said before a weekly event with Dr. Bowen's workers was to enjoy each other's company at the end of the work week on Friday afternoons. We would discuss science or gossip while we consumed beverages. It was a very enjoyable time after a busy week of science. Sometimes Vaughan would join us. He retired in 1982 and his group parted. Some members moved to other jobs away from WHOI while others were able to find support within the Oceanographic. The Friday afternoon socialization has never ceased to occur and I think it speaks to the closeness of Dr. Bowen's group. A nucleus of the "family" meets to this day currently at or in CRL.

Frank - Now, when the group fragmented did you have a stressful period again or were you relatively sure you would find something?

Hovey - It didn't come close to the stress of leaving the Biology Department and thanks again to Dr. Bowen and John Burke. During the three years I worked for Dr. Bowen John Farrington was making a name for himself in the Chemistry Department. Dr. Bowen and John had a number of joint research projects. In particular one pops into my mind and that was the mussel watch program. John was heavily into the mussel watch and members of Vaughan Bowen's group that would sample animals, sediments and water column components for the naturally occurring radionuclides would collect extra samples of each for John. He wanted to measure PCBs and PAHs, chemical compounds produced by industry and found concentrated in plant and animal tissue and a variety of environments. These compounds could be dangerous to humans if consumed or were heavily concentrated in environments where humans existed. I worked with some of John's techs so he was able to see my work ethic, my dedication to the Oceanographic and hired me full time to help him in his research.

Frank - When you make these switches does your pay grade stay the same or do you have to go out and dicker around for that?

Hovey - In all of my movement between groups I've been able to maintain my level of pay. I thought I brought to a new group valuable expertise that they appreciated so I retained my pay grade. Very early in my career the Institution went through a re-evaluation of the graded and technical staff ladders. This re-evaluation happened when I first worked for Gil Rowe. I became a Research Associate and stayed at that level for thirty years. So during each change, fortunately, I was able to carry on what they expected of a Research Associate and maintained my level of pay.

Talking about maintaining one's pay level makes me think of a situation that came about while working for John. When a technician is able to remain with one supervisor for a considerable amount of time and does commendable work his/her pay level does rise with promotions and cost of living raises. Should that supervisor wish to move elsewhere or be forced to leave because of not reaching tenure, the technician would be looking for other support with the elevated pay level. In the mid 1980's we saw a number of situations where new scientists who needed technical support would choose to hire an inexperienced person over the experienced technician because of the considerable difference in salary. It so bothered a number of the technicians in the Chemistry Department that we approached the Chairman, Geoff Thompson, and asked that we not be given any more raises. We appreciated having a job with less pay than no job with more pay. Geoff would have none of it.

I worked for John for seven or so wonderful years. Of all my immediate supervisors over my career he was the best, a marvelous, caring, thoughtful, warm individual. And another wonderful feature about John - if there was a dirty job to be done he was beside his techs helping out. His laboratory was filled with another great family, not as large as Dr. Bowen's, but the same kind of lovely individuals like Bruce Tripp, Jack Livramento, Kasha Hammar and Debbie Maloof.

John left WHOI around 1989 to work in the Education Department at UMASS Boston and it was at this time I had to look for support with an elevated salary.

Frank - You know it's really interesting as you talk about all this to have a total career at the Woods Hole Oceanographic Institution involves a lot of luck too. I mean you really have to be in the right place at the right time.

Hovey - I have a marvelous, wonderful story regarding the box corer and I've used it during my tours for the public that I have recently become involved in. An awful lot of the public who come for a tour to learn something about the Oceanographic don't have a clue about oceanography, sampling gear, going on cruises, an oceanographic vessel, "putting something over the side", or working a ship twenty-four hours a day. So I carry a few props with me as I walk my guests around the dock. Among the props are the four standard oceanographic wires and a fishing pole.

The different wires gives them a flavor of what's required for different size pieces of gear and the fishing pole helps them imagine a crane picking gear up off the deck swinging out over the side and then turning a drum of wire to move your gear up and down the water column. My four wires include short sections of quarter inch hydrowire, .322 inch conductor cable, half inch trawl cable and fiber optic cable. The piece of half inch trawl cable has an overhand knot tied in it. As I show these wires to the group I always hope that someone will ask me how did I ever get that knot tied and, of course, that just leads me right into the story that I love to tell. This knot is hanging over my fireplace whenever I'm not using it for tour groups because it was a part of one of my experiences with the box corer and thank God for Jerry Cotter, the boatswain, the best boatswain in the whole world that I ever sailed with who for many years ran the decks department of the KNORR. I was on a cruise deploying a box corer which weighs about a ton to get a soft bottom sample. We were working in about 3,000 meters of water. We did everything according to standard procedures I tell my tour group while I handle my knotted cable and then exclaim, "For some reason King Neptune intervened." I pause, scratch my head a bit, smile then try to explain how we think we tied the knot. And this whole story emphasizes under the best of conditions things can go wrong.

The deployment went well, corer to the bottom to sample the sediments, took a bit of the bottom and was on its way up. Some of us were standing at the edge of the ship watching the wire come out of the water and into the winch system. All of a sudden with about eighty meters of cable still out the knot comes through the ocean surface. We stopped the winch stunned. We did not deploy the gear with the knot in the wire because it would not feed through the sheaves.

We tied off the line below the knot, cut the knot out and then hauled the rest of the gear aboard piecemeal thanks to the very capable work of the boatswain. When all was secured we had time to sit around and ponder. The only explanation we could come up with was that some of the half inch cable got ahead of the corer on the way down and cast a small loop on the bottom. The corer followed along and sat right in the center of the loop and took a perfect sample. When we started to haul back the loop slid up the side of the corer and cinched tight about eighty meters above the instrument.

Most of my tour groups prefer the King Neptune explanation.

Frank - And here's a boatswain who probably had no scientific background whatsoever, but in a sense wasn't he really training the scientific staff on how to behave and how to do their job at sea?

Hovey - Positively.

Frank - That's a pretty big thing.

Hovey - One of the experiences I missed in graduate school, not so much my fault but because Scripps just didn't have it as policy, was to take graduate students out on their ships to experience sampling at sea. So I didn't have much seagoing experience until on-the-job training back here at WHOI.

Fortunately, it's an ongoing policy here at WHOI, we try to take Joint Program students out on initiation cruises as often as we possibly can, if only just on the ASTERIAS near shore. But you get a flavor for the smaller instrument technique anyway that you can expand to handling heavier gear on a larger vessel. And Jerry was a key man in bridging that gap between a rookie green scientist and a successful cruise.

Frank - When I was doing an oral history with Emerson Hiller, whom you know well, one of the questions I asked him was how did he work with the Chief Scientist as Captain of the vessel. He just kind of pushed it aside, but it was interesting when I looked at one of his scrapbooks when he retired and many of the former Chief Scientists, Principal Investigators sent little notes. Most of them had something in there that said they walked very softly around Captain Hiller. Because he had to train them. He told me about this Scripps scientist who was actually going to run the ship over a cable one time which may have holed the bottom of the ship, you know that sort of thing. And yet you're not going to see their names on any of the scientific papers or anything like that. You're making a wonderful case for the community you have to have to get a job done and get it done properly.

Hovey - Right. And there have been cases where a scientist or a technician didn't put forth the needed effort and the crew will sense that. The crew will match and in most cases exceed the effort of science to succeed. But if science doesn't try there isn't the one hundred and ten per cent coming from the crew.

Frank - It's so interesting to me, if an organization like this, as world-famous as it is, ever loses that familial feeling, this brothers helping brothers kind of thing, scientific work is going to suffer, because you really have to bend over backward to help the other guy.

Hovey - It's a team. It's got to be a team effort. Even if a scientist is on the wire and you've done your work, he may have helped you muscle some gear around the deck when you were on the wire, now it's your time to help, you've got to.

Frank - Because they're not all operating with the same budgets either.

Hovey - Sure. Ninety-nine times out of hundred somebody else not directly associated with the group would come and pitch in. You had to do it. This happened on a VERTEX cruise off of southern California. I had taken a box core and was processing the subcores. The box of the box corer could be subdivided into twenty-five chambers so one could obtain twenty-five subcores with each deployment. The ship was maneuvering to pick up a moored buoy and the group responsible for that buoy did not have all of their group ready. As they scurried about the deck to get prepared I realized they could use an extra hand and indeed was a help for thirty minutes or so. Unfortunately in my haste to help I left five of my subsamples unsecured and of course when I returned they had tipped over and were lost. However, I had twenty more. All was not lost and I felt good by helping fellow cruise members. But fortunately because there were twenty-five samples in this particular box core I had a couple more to go back and save the day, so to speak. So these kinds of things happen.

Frank - An awful lot of the scientists now have Research Assistants that are female. Is that a problem on board ship in terms of needs to muscle things around and deal with heavy items?

Hovey - No, I haven't seen that. It has been my experience that women will pitch in to their ultimate capacity. And if it comes to needing more muscle they do not hesitate to ask for help. One woman that comes to mind worked for the Sanders/Grassle group here at WHOI for many years. Her name is Rose Petrecca, and George Hampson and I accompanied her on many box corer cruises. Not only could she work the gear but she was also a fine organizer, planner and on numerous cruises acted as Chief Scientist, a Research Associate running a cruise. She was always in the thick of the mud as much as all of us and would try to push heavy weights around if needed, but wasn't stuck on the female/male aspects of things and if she realized she wasn't strong enough she wouldn't hesitate for a minute to say please help me I can't do this. She is an exceptionally wonderful oceanographer, and now still is working for Fred down at Rutgers.

Frank - Yeah, that's a big name. I think we probably should clear this up right now. You use the term "Research Associate" and it almost sounds like in some respects it is really secondary to the principal investigator or the Chief Scientist. I'd like to point out at this point that the Research Associates that I have met here at the Institution are more than capable of teaching an undergraduate level college course in what their specialty is. These are not people with only on-the-job training you know. I wanted to make sure people understand where on the ladder they actually sit.

Hovey - Yeah. I've known cases where a scientist doesn't have a clue how to do business at sea but will have a Research Associate or Research Assistant that could carry out his wishes to a T and provide him with wonderful samples. And the same can go on in the laboratory.

Frank - As a sergeant in the Army trains a new lieutenant.

Hovey - Exactly. I've seen that happen time and time again.

Frank - And do you think the appreciation is there for what's been done for them when they become so-called big names?

Hovey - Nine times out of ten.

Frank - Great. Now we've gone through -

Hovey - We're in the middle of the John Farrington time period. A lot of local and distant sampling for mussel watch. We had stations around New England, natural occurring communities of blue mussel, Deer Island as a contaminated source, clean sources like Sandwich, stations in Rhode Island, Connecticut, New York City, Long Island, New Hampshire, Maine, nearshore environments where John would send us to sample mussel communities, bring samples back to the lab and process for his PCB and PAH research. Part of his research included getting clean mussels and putting them in suspected contaminated environments. We had a project where we would collect clean mussels in Sandwich, buckets and buckets of clean mussels and place them in plastic cages. We would then SCUBA dive in areas around the Cape and place the cages in areas where the mussels, being filter feeders, would filter out suspected contaminated particles. After a time period we would collect our cages and bring the mussels back to the lab for processing. The national U.S. mussel watch program grew into an international program. The mussel was such an easy organism to work with and it could survive in many different environments.

Frank - Now as you progressed through all these principal investigators you progressed through, each one of which had a different focus in what they were working on, did you pick up the enthusiasm for what it was - I mean now you're into environmental concerns, very different than what you started at -

Hovey - Yes. And it came from the members of the group starting with the chief scientist. He was so excited about his interests, it just flowed to his technicians and assistants. And John and his group, again, just presented a working environment that just made coming to work every day special. Bruce Tripp was a wonderful member of that group. He excelled working in the lab. He would take the samples and process them and extract the chemicals that John was interested in. Both John and Bruce Tripp came from the New Bedford area and may have gone to a local junior college that taught many subjects related to the dye industry. So that's where they got their chemical background and slowly worked themselves to the oceanography side of chemistry. Bruce was very comfortable in the lab, maybe not quite so comfortable going to sea, not that he didn't do a wonderful job on board ship. This brings to mind a wonderful experience we had on the ASTERIAS outside New Bedford Harbor. A number of businesses that built capacitors for electric companies were situated along the Acushnet River which emptied into New Bedford Harbor which opened into Buzzards Bay. In the 1940's and 1950's it was legal to empty factory wastewater into the river. A byproduct of capacitor construction was PCBs. John received funding from a number of agencies to study the fate of those chemicals throughout the greater New Bedford Harbor area.

Frank - Cause that stuff doesn't flush

Hovey - That's right.

Frank - You know that's there for centuries.

Hovey - Yes. So for seven years or so we conducted a number of programs in that area along with our mussel watch project. On this particular day the group wanted a deep sample of the sediments. Not only did John have an MKIII box corer, but he also had a Soutar corer. It's just another bottom sampler that gave you less surface area but greater depth penetration. But it was still a heavy piece of gear because, again, we didn't ram these instruments into the bottom. We depended on the weight of the corer to give us our penetration and if the sediment was soft enough this corer could give us a four foot core. The corer was well secured to the side of the ASTERIAS and Dick Colburn set off across Buzzards Bay to our station. Bruce being a little bit more of a laboratory specialist came on this trip dressed in a nice shirt and maybe he had a tie on and decent clothes where Hovey, the grub specialist, was dressed up in appropriately mucking up kind of clothing. So when we got to the spot that we wanted to sample, Dick Colburn positioned the boom perfectly for deploying and retrieving this heavy corer. All was prepared. Captain Colburn ran the winch, picked up the corer and once it cleared the side of the vessel Bruce and I pushed the corer outboard a little, then Dick slowly ran the corer to the bottom.

Frank - Pretty tricky?

Hovey - Yes. The conditions were wonderful this day except for a slight wind. The wire ran right down by the starboard side of the ASTERIAS, and it didn't take more than thirty seconds to reach the bottom. When one samples like this in shallow water it's sound practice to yank on the slack wire a few times to make sure the closing apparatus is free to function. Bruce decided in his dress clothes, so to speak, to be the one to give the few yanks. I had the lines to secure the gear once it got aboard. So Bruce is standing on the gunnel doing his little yanks when holding onto the wire and turned his head to Captain Colburn and said "up easy Dick". So Dick slowly starts to haul the corer back. Holding onto the wire tells you a couple of things. You know instantly when there is no slack in the wire because it comes up real tight and you can tell when the corer comes out of the bottom. As soon as the cable became tight Bruce realized that the ASTERIAS had drifted slightly and the corer was no longer directly under the vessel. Still holding onto the wire and teetering over the side he decided to keep a hold of the wire rather than try to gain his balance on the gunnel. Maybe he thought the Captain could move the ASTERIAS over to him but that was not possible. So here's wonderful Bruce Tripp with quarter inch cable going through his hands and he stayed there for an amazing amount of time, holding on not getting wet, but then slowly, slowly his grip slipped and he finally realized when the water was getting up to knee level he couldn't hold on any longer. He slid into the water, swam over to the ASTERIAS, and we hauled him aboard with a very red face and then Dick pulled up the corer with a great sample in it. When Tripp retires if I'm invited to his retirement party I'm going to roast him a little bit on that one. So I'm looking forward to that. Let's see, during my time with Farrington Fred Grassle's benthic ecology group was heavily involved in a program with Battelle up in Duxbury, where they were sampling ten stations on the 2,000 meter contour of southern New England. It was a big project. I often joined George Hampson, Rose Petrecca, Linda Morse Porteous and others in that group to help them at sea. The aim was to sample ten stations along the contour and take three box cores at each station. It was labor intensive and we worked the ship twenty-four hours a day. We often completed the sampling in less than ten days because of the expertise and camaraderie of the participants and excellent shipboard support.

Frank - Is this all continental shelf work?

Hovey - Yes. Although sometimes we'd go out in deeper water.

Frank - But this was really the first of the real dedicated interest in nearshore waters, which has gotten larger and larger and larger.

Hovey - Yes. I bring up the VERTEX work because it got me into the wonderful experience of tethered SCUBA diving. It was a way of SCUBA diving that hadn't been used until a few years ago. Divers would drift along with a water mass and gently sample delicate animals. Historically delicate critters were mashed into the cod end of a plankton net. It was a simple system consisting of a sixty foot line attached to a floating skiff. SCUBA divers would hook into the down line and drift along with the water mass coaxing undiscovered delicate animals into sample jars. Our group went to sea a number of times with this Santa Cruz group and utilized sediment traps, MKIII box corers to get the whole realm of sediment components coming down the water column. Starting at the surface phytoplankton people would study the animals and the plants that live on the surfaces, set up a food chain where their waste would rain down the water column. We would collect in sediment traps along with sampling on the bottom with corers. But this experience of utilizing tethered SCUBA diving to sample surface waters impressed me greatly. Most of my experience had been on murky bottoms except in California where I learned to SCUBA dive. Around WHOI you're lucky if you've got ten foot visibility. To go from diving in murky waters to a realm of limitless visibility was breathtaking. There was nothing to focus on in the distance - you could see forever.

Utilizing this mode of SCUBA diving with the Santa Cruz group on the VERTEX trips we were at the same time fine tuning its safety aspects. Around 1984 - 1985 there was a tragic SCUBA fatality while doing tethered diving in Monterey Bay. In the early days of tethered diving there wasn't much thought put into making it safe. A scientist and his grad student were tethered to a much too heavily weighted down line. Also their safety lines that connected them to the down line were knotted to their weight belts and then knotted at loops on the down line. The down line attached to the surface skiff came loose without the skiff tender noticing. The weighted down line began to drag the divers into the depths when the scientist realized it was getting darker and darker. Guessing what might have happened he jettisoned his weight belt and swam to the surface. Seeing the skiff a long distance off he dove down to try to find his dive buddy. Of course she was contending with the heavy down line and now the added weight belt. Her body was never found.

Frank - You can go down a long way in Monterey Bay.

Hovey - Yes. So the safety issues of tethered diving went through a great overhaul. Nowadays you have a tender that's very conscious of what's up there, stays up there. You have your down line with minimal weight. You have a safety diver that doesn't do anything but monitor the lines that go out to the different divers. You have quick releases. All you have to do is pull a little tag and you're released. The line comes back to a pulley with a little bit of a weight on the end so that as you go back and forth from the down line you have a take up weight that keeps the line taut between you and the down line. The safety diver is constantly looking around making sure nobody's getting all tangled up. And out there you're conscious of sharks, but that's the safety officer's job, be aware of what's going on. So you can safely go out with jars and your goodie bag and catch debris and animals. Some marvelous new exotic animals have been sampled in this manner. Richard Harbison and Larry Madin of WHOI have, for a number of years, utilized this means of doing some fabulous research.

Frank - They're a unique combination of people, besides being expert scientists, they are also expert divers, photographers, they do the whole thing.

Hovey - They sure do. Okay. One sideline, and maybe Terry Rioux expounded or talked a lot more in detail on this but it was during this time that OSHA was making diving a little difficult for scientists, insurance-wise. Science divers were placed in the carpenter's union which also covered commercial diving around oil rigs. One of the requirements for SCUBA diving around oil rigs was that you had to have a decompression chamber on the rig above you. And to subject scientific divers to that kind of a requirement would just make it much too expensive for any scientific institution to have a SCUBA diving program. So the scientific diving community formed the AAUS, the American Association of Underwater Scientists and part of their mission was to prove to OSHA scientific divers could police themselves safety-wise. Part of that proof was SCUBA divers had to be first aid and CPR trained and follow a regulated safety program set down by the association of underwater scientists. Terry has followed the AAUS guidelines expertly and we have a super diving program.

Frank - Terry Rioux is the Diving Safety Officer at the Woods Hole Oceanographic Institution.

Hovey - Thanks. A number of Terry's divers have become involved in helping Terry teach the first aid and CPR aspects of that program. During my Farrington tenure we became EMTs which enabled us to teach a more involved and instructive first aid course to WHOI divers and other employees. We are grateful to the Education Office for supporting us by covering the cost of our EMT training at the Cape Cod Community College.

Okay. John in 1989 decided to change jobs and work at UMASS Boston and for a short time I struggled with losing support and having to find support from another source.

Frank - Well we are up to session number 6 with Hovey Clifford. Last session Hovey had been continuing along with his career at WHOI and the people that he worked with and at one point he worked with Dr. John Farrington, who is currently the Dean of the MIT/WHOI Joint Program and is Associate Director of the Institution. Now John Farrington left the Institution at one point to go to the University of Massachusetts, Boston, in the environmental chair and that's where we left Hovey last time and if you've been following this whole series of talks you know that when the top man leaves everybody else is kind of out on a limb so to speak. So maybe we could start at that point, Hovey, and you could talk about what went on.

Hovey - Thanks, Frank. Well it looked like I was going to do a little bit of struggling again, but John, being the very caring person we all know, sort of helped his group out a little bit by maybe easing that transition. He had a group of maybe four or five technicians and co-employees in his group and he also had many strong associations with other scientists at the Oceanographic. So he advised Bruce Tripp, myself and a couple of his other technicians to look around in the Chemistry Department first and at least go visit a couple of people that he had spoken to already. In particular he recommended to me that I go see Cheryl Ann Butman in the Ocean Engineering Department. She had projects in a number of departments because of her interests in animals, sediments and sediment movements. And also John had been an adviser for Dan Repeta, who had worked up, as did Cheryl Ann, through the Joint Program and had become employed as an Assistant Scientist here at the Oceanographic. So I was exceedingly fortunate with a little bit of John's help to get part-time support from those two scientists. So there wasn't such a traumatic switchover for me. I knew both of these people, having had minor associations with them. We had been on cruises together and also worked on committees at the Institution. I was very comfortable with them and they seemed to be comfortable with me by giving me some support. It was enjoyable working for both of them because of their interests. Cheryl Ann was, again, a scientist interested in not only the biota but sediment movements, what kinds of animals might first start to populate a stressed environment, water moving sediments burying communities, things like that. Dan was more of a pigment chemist and there was an awful lot of pigment chemistry that needed to be done that excited him. Pigments in the overlying waters at the surface, filtering down through the water column, settling on the interface and then maybe eventually getting buried, so the expertise that I had developed in the previous twenty years helped me bring some usefulness to both groups' tables.

My experiences in sampling the bottom helped in both labs. Cheryl Ann had a plankton pump that she designed which looked like two flying saucers, separated by posts, separated by three or four inches. A plankton pump, a water sucker would draw the water from the environment into a center area of the bottom saucer and the pump could be programmed to take discreet samples. The animals would be drawn into a jar that contained some fixative.. New jars were cycled under the intake port according to the program in the pump. When I joined Cheryl Ann's lab she had no vehicle to hold her pump system in her sample areas. So I did a little bit of "kluge" engineering, that is you look around the Oceanographic, find some metal and rope and tape and fabricate something that works. Her two flying discs were so designed as to prevent plankton from sensing that they were being caught in a water flow until it was too late to escape. So my plankton pump frame or vehicle had to have the same restrictions. My frame components had to be away from the intake enough that the critters couldn't sense their fate. I got an awful lot of enjoyment building it for her and I was able to take it on a couple of Caribbean cruises utilizing the Harbor Branch vessels along with their deep submersible subs. Not only did we get some very good

data utilizing this plankton pump but we also got some good cores around St. Croix. I was also able to go down in the Harbor Branch subs. That was an exceptional treat because although their subs cannot go as deeply as the ALVIN you can see so much more. Their chamber is an acrylic sphere where instead of a small six inch diameter porthole as in the ALVIN you could almost see spherically the whole environment. That was a special treat to be able to utilize that sub. Work with Dan Repeta involved mostly laboratory work. I did spend some time on cruises and sampling local study areas, but the majority of my time was spent in the lab. We would acquire water column or sediment samples, work them up in the lab extracting the pigments and then inject the pigments into analyzers that could determine and graphically represent the different pigments that were in the sample. The manipulations came easy to me but, because of my limited pigment background, even though I got some magnificent traces, to know what they actually meant I had to rely on Dan a great deal. While I worked for him he sent me on a cruise on the ATLANTIS II from the Azores to Iceland. None of my previous cruises ever took me to either place. I thoroughly enjoyed those two ports. The entire cruise was spent subsampling the Niskin bottles of a CTD rosette processing the water samples to the point of injection into the analyzer and then collecting the pigment spectra as the final product. It was a very enjoyable and fruitful cruise. My favorite memory of the cruise though was being informed out at sea that Judy McDowell, Dick Colburn and I were the first recipients of the Vetlesen Award. This is an award for meritorious work at the Institution instituted by our new Director, Craig Dorman. And the most meaningful aspect of the award to me was that you were nominated for the award by your fellow employees.

Frank - To the listener I would like to point out that the Vetlesen Award, basically if I was going to put it in real straight language is kind of a Mr. WHOI Award, someone that really is very, very, very much involved with the workings of the Institution as a whole, serves on committees, inspires and helps run clambakes, does course work like CPR, things like this, and is exceptional in their own job. So for the Institution it's a very prestigious award to have.

Hovey - Thank you.

Frank - One thing I'd like to ask about going for your career path here. It's interesting that when I look back over the whole history of the Institution, the first people that came, the 1930, 1935, 1937 people they looked out in the ocean, they observed, they wrote down what they observed. I think today we might almost call them naturalists rather than scientists. Then we get into the big data-collecting groups, you know the early K. O. Emery years where they collected massive amounts of data. And it's about that time you came along and started to work at the Institution and it started at that time to become very specific in what the scientist was looking for. They were dealing with very narrow kinds of things and it's interesting to me, as you moved through your career path, after several of you went to John Farrington who was into things like mussel watches which involved some substrate as well as some air as well as water washing through, so he's starting to become a little broader and by the time you got to Cheryl Ann Butman she was really talking environment and, you know, when you said her biology/physical oceanography/geology interests and there are so many people here that I would call biogeochemists and things like this you know. So you had gone from the beginning from very specific to what is the thing now really into looking at a whole environment. I guess the best way to describe it, so many youngsters would say to me I want to be a marine biologist. And I'd say don't be, be a biological oceanographer and I'd then explain the difference.

Hovey - Yes. Over the recent years I think it has been forced on by the fact that you've got to really come up with ingenious proposals in order to get funded and the more you can tie in interdisciplinary interests I think helps that funding process. And if you want to go to sea to investigate an area or maybe an hypothesis you can't go with blinders on. You must incorporate a number of approaches and views to help tie everything together in that study area. I think that's a major focus nowadays too.

Frank - Now is this the pair you stayed with for the rest of your career or did you -

Hovey - No. John, Dan, Cheryl Ann and I knew from the beginning their support was to be that "bridge" to a more permanent position. Dan and Cheryl Ann were great friends during a time of need, but in late 1991 and early 1992 I was getting the feeling that it was getting more difficult for them to support

me. I then began to search for support about the Institution. A couple of fortunate things for me happened around this time. Jimmy Gifford, a long-time WHOI employee, had retired in 1989 or 1990 and his last position as Dock Master had not been refilled. The dock had begun to show that, with gear scattered about the area when it should have been stored at the warehouse. Also the dock operations became rather chaotic when the ships were in.

Barrie Walden, manager of ALVIN operations, and Dick Dimmock of the Port Office were becoming aware of a need for someone to help with the logistics of getting scientists and their gear on and off our ships here at WHOI or at other ports. If that process could be streamlined and facilitated everyone felt it certainly would make using our vessels more appealing. Barrie saw a need to carry the logistic aspects a bit further by having someone to take charge of setting up ship's laboratories according to the wishes of the next scientific party.

So Barrie Walden, Joe Coburn, Dick Dimmock and Barbara Wickenden got together and created a position supported half time by the Port Office and half time by ALVIN operations - a dock master-logistics-seagoing services expert. It was an incredible position. You could put as much of yourself into it as you wished. It was open ended. There was enough to do for two people so I jumped right in. The main focus of the dock was to support our fleet at home. Scientists, gear, fuel and stores had to be handled expeditiously. The dock itself had to be kept in good shape - fenders, bollards and sheathing. The dock was also a fine facility for land-based research. Scientists wanted to come to the dock and dangle equipment over the side for testing so there was a need to keep the dock in a physically workable position. There's a tendency for employees to bring their gear there and say I'll come back tomorrow when the work is done and take it back. Well you know things come up so the dock is an easy place to become a junk pile. So tactfully I would ping on scientists or return gear to the warehouse, to storage areas, back to laboratories myself. The dock was kept in a tip top workable shape for a multitude of activities, not the least of which was pitching a tent on Paul's Mall and entertaining guests or employees during special events. We've had graduations on the dock. We've had award ceremonies. So the Port Office saw a need for a position for someone who could keep this fine facility working well in a host of related ways, keeping science happy, keeping the home port happy, keeping the ships happy. There was so much to do that my eight hours plus per day was exceedingly full and fulfilling.

Frank - Now did one agency in the Institution pay your salary or were there several that did?

Hovey - Two major ones, the Port Office and Barrie Walden's SSSG, and that stood for Seagoing Science Services Group. The group was made up of a number of specialists whose main focus was to set up our ships to aid scientific parties the best ways we could to accomplish their missions. I joined that group in May of 1992 and lasted until my retirement, sort of the last ten years of my WHOI full-time life, so to speak. And it was a wonderful seven, eight years. Over the years I met a lot of seamen and scientists as I prepared the vessels for oncoming parties, and sometimes worked out of other institutions where our ships had berthed. It was an exceedingly pleasant last seven or eight years. I was able to do some traveling also. The KNORR and OCEANUS had to go to Jacksonville for drydock repair. The new ATLANTIS had to go to San Diego numerous times because it was working in the Pacific. The KNORR went to Freemantle, Australia, and I was able to travel there and set up the labs for a series of cruises across the Indian Ocean. It was there that I was able to swim in the Indian Ocean. Not many people can say they've had a dip in the Indian Ocean. When the ATLANTIS went north along the Pacific coast up to Astoria I was able to facilitate the transfer of science and their gear.

Frank - And some of this must have been set up. I could be real wrong in this and you can correct me if I am. But some of this must have been set up in a certain respect to make sure a valued, long-term employee was able to finish out his career in some kind of reasonable comfort without worrying about looking for a new position or something like that. And that must have made you feel very good.

Hovey - Tickled. I was really moved, and I'm sure there were others behind the scene that I was unaware of, by the efforts of Dick Dimmock, Joe Coburn, Barrie Walden and Barbara Wickenden to create this position and they had to advertise the position.

Frank - Of course, that law.

Hovey - Yes, but knowing my background and seeing the numerous needs that they felt that I could comfortably fulfill well they didn't just say let's just cook up something for this guy and keep him here. It was a genuine effort to fill a need but designed in such a way that I was able to move right into it comfortably and do what I think was a good job.

Frank - Now did you also have the responsibility of making recommendations on upkeep on the infrastructure there and all that sort of thing?

Hovey - Yes. It was important to spend a lot of time on the dock because of how busy it was, so naturally there were lots of suggestions that would enhance the use of the dock. I found it very comfortable to go to Joe Coburn and Barrie and make recommendations and the majority of times they were very supportive and the changes were carried out. Sometimes we bumped into brick walls as Terry Rioux and I did once concerning a structure on the dock. It was a large storage shed for metal materials that were surplus or left over from projects. The shed was under-utilized and very much in the way of many activities. In spite of our requests for removal the shed remained until, I'm happy to say, very recently it has been removed giving us a couple hundred square feet of useable dock space. Another subject of concern was the decay of the dock sheathing which was obvious to anyone SCUBA diving around the dock. Bolts that held the planks in place had decayed away over time, which allowed them to fall to the bottom under the dock. The planks were large and heavy and if one fell on a SCUBA diver it would have been disastrous. Our concerns fell on deaf ears until very recently.

Frank - So that brought you up to the end.

Hovey - Right up to the end.

Frank - Well you certainly have known, you've probably known more people in the Institution, because basically you're a very friendly outgoing type of person. Who are some of your most admired WHOI people?

Hovey - Well, I agree. Being kind of a, I don't know what the right word is, but exceedingly friendly, I have a ton of dear, dear friends. I guess my two favorite, and, again, I must stress there are many, but right at the top of the list I have to say John Farrington and Judy McDowell are special, special people. I worked with and for both of them, although to a lesser degree with Judy. But I found them caring and wonderful, there are a whole host of adjectives that would describe these two people for me. Maybe what leaps out is that the person comes before the job, humanity before the job, caring before the job, not that the job wasn't important to us, but they were most concerned with you as a co-worker, as a person. That was most important with those two. Both of them would get as dirty and grubby accomplishing the mission as they would ask of their help, their technicians. I've got a wonderful picture of John helping us deal with the sediments in a good box core off of Peru where he is just covered with mud just as everybody else was and he's got his hands up in front of his face and it looks as though he is taking care of his complexion. In the early days when my daughter was growing up in the Falmouth school system, without trying to interest her in science, but just because it was a part of my life she took a liking to chemistry and physics and things in high school and without, again, pushing, she was attracted to the Falmouth Science Fairs. She liked biology so we approached Judy to see if she might advise Sheila on a freshman science fair project. Judy treated her royally opening up her laboratory for Sheila. As a wonderful mentor she guided Sheila for four years during high school and she did very well in the science fairs. Sheila went off to college and came home in the summers and worked in Judy's laboratory as summer help. When I worked for John Farrington he and Judy had a number of projects together. At times I was working for both of them at once. Judy had two excellent technicians, Dale Leavitt and Bruce Lancaster. Also they both were SCUBA divers. We worked a lot together in many of the local near-shore environments SCUBA diving, clamming, mussel watch, coring and grabbing. We were an exceptional team which only reflected the fine guidance from John and Judy. So I must say it again my family was exposed to two wonderful families at home and at work made up of caring individuals with values that mimicked Rose's and mine. So I would say those two are my stars.

Frank - One of the things about this job as an oral historian is you get to hear lots of people's comments. It's interesting to hear that John Farrington probably ranks way up there in your firmament, he's number one in terms of a human, and yet the head of geology and chemistry, John Hunt, a few years ago I asked him who was probably the brightest person he had ever hired, and John Farrington's name came up. I think it's wonderful and part of what this Institution is all about that you can be the best and the brightest but you can also be the neatest. I think that's kind of cool.

Hovey - Yup.

Frank - How about the Directors. Did you ever work for Paul Fye?

Hovey - He was here, Frank, when I first came. I was certainly aware of Dr. Fye as the Director. As a new employee I hadn't joined any committees or attended any events where I would bump elbows with Dr. Fye, but he was, if I remember correctly, a little bit of a hands-on Director so I guess my line of judgment on Directors was, as a new employee, how often might I meet them in my immediate environment. In the early days Redfield, the Iselin Dock, Smith, Bigelow and the Blake area was pretty much the Institution. Occasionally we'd bump into Dr. Fye. Seldom did I ever bump into John Steele. And vaguely in my recollections I seem to recall fellow employees feeling that John Steele was more interested in the science and scientific staff side of the Institution than let's say the support staff. Craig Dorman in my eyes was just the opposite. He cared for the grunts.

Frank - The operational end of things.

Hovey - Right. Once a week at the very least he'd come down to the dock with his sleeves rolled up, no tie, no jacket, and go from place to place specifically asking the groups, the individuals how are things going, how might we improve, if indeed you see a need for improvement. Directorgrams, the monthly newsletter flourished during his time here. Communicating with the whole workforce with his Directorgrams. There was a feeling that he really cared about the support side of the Oceanographic. So in my simple way of judging Directors I think Craig Dorman was my favorite. Bob Gagosian is sort of just beginning although I'm a bit discouraged now. Seldom do I see him in any of my work areas. He started out with Directorgrams, but no more. For about a year and a half no newsletters were published - a very popular means of communication for the employees. Finally through great efforts from Vicky Cullen and her group that is up and running again and quite appreciated. Bob has only had one or two "State of the Institution" addresses and we miss those opportunities to learn how the Institution is doing.

Frank - He's a new kid on the block.

Hovey - There you go.

Frank - One of the things that has made the Woods Hole Oceanographic Institution what it is is the fact that you did have the John Farringtons that would look out for his employees like they were family members, find other possibilities for them in the Institution and so on. You certainly weren't going to get rich here. You could maintain a certain kind of lifestyle that probably did not include the French Riviera and things like that. Is there a possibility that could be lost here? Or is that something you'd rather not answer?

Hovey - Let me beg out of that one.

Frank - That's okay. Times change. You know one of Gagosian's tasks is to take the Institution from the twentieth to the twenty-first century. But it's interesting that I have heard from others that people are not down on the dock, they're not looking at infrastructure and so on and so forth. Well okay those were the Directors. Now Hovey Clifford becomes the newest Director of the Oceanographic. What would you do, Hovey?

Hovey - Well a couple of things pop out in my mind. I love the ALVIN so much, this marvelous deep-ocean tool that takes eyes down to the bottom of the ocean, I think I'd try my utmost to enhance the capabilities of the ALVIN or get a new sub that can go deeper. I've seen a chart of the world's oceans where just adding another 2,000 meters to the depth capability leaves little ocean bottom unable to be investigated.

Frank - Couple of trenches maybe but that's about it.

Hovey - Right. I know the Japanese have a sub that can go to 6,000 meters.

Frank - The Shintag

Hovey - Yes, and I think I would really push for that. Between you and me and this microphone I'm not shedding two many tears about not getting the SWATH vessel. It had some good features but what bothered me the most was the chance of losing the ASTERIAS. I have a very warm spot in my heart for that vessel and would hate to see it go. I know absolutely nothing about marine architecture, but I would push for making the ASTERIAS faster if possible and rearrange the deck to make it work for a greater scientific community.

Frank - Particularly in view of the fact that although the Oceanographic Institution is a blue water, there's still an awful lot of coastal stuff that's coming along now.

Hovey - Positively. And that vessel could still go to places that the SWATH vessel could not go because of its size and what it draws. So I was a bit concerned about that.

Frank - Oh, it's out there.

Hovey - Yeah. Because of my stressful experiences between jobs, as a Director I think I would put some effort into pigeonholing funds, as they do for the scientific staff, to bridge technicians and graded employees between jobs if supervisors and administrators saw value in that employee.

Frank - Would you go along with the idea of reducing the size of the Institution to be able to fund better a permanent staff from technicians up?

Hovey - That's a toughie. I would go along with it if you could reduce the size by normal attrition. But you must maintain a workforce to provide the very best product that's possible. This brings to mind a situation a few years ago in the mid 1990's when the Institution had to cut back its workforce because of a lack of funding. It appeared to me and my co-workers that there were no guidelines to decide who would stay and who would go. In some cases it appeared that employees were let go because they had personality conflicts with their supervisor. I was close to a situation where I observed two employees let go, one was about to retire anyway so he didn't feel too badly, but the other was crushed. And I felt he was excellent at what he did only he had trouble sometimes with his supervisor. To add insult to injury it was realized that the group could not function well with the loss of two members. So the administration shifted a person from another group to fill in and he knew close to zero what the position required - a replacement that had to be taught from the beginning. In the end the replacement quit the Institution because he didn't enjoy having to start at the beginning of the learning curve. There were cases where bad apples - those who stole from the Institution - those who didn't work an eight hour day but said so on their time sheet were let go. That worked out. However, there were too many excellent employees who were let go for very obscure reasons. No guidelines.

Frank - That would be a real human thing for you as the Director. It's been my experience that every department here at the Institution is always two to three people shy of what it really takes to run that particular job. I see some people, Sandra Murphy being an example, that everything seems to roll down and land on her desk. Is that a problem you'd address as a Director.

Hovey - Yes. There must be many sources of extra funds to be found. Dr. Dorman did, finding funds for the Vetlesen and Penzance Awards. We had never heard of anything like that until he found it some place in Washington. And I don't know what's out there, but before I'd try to streamline and being more of a person person I guess I would try to find support to keep or maybe add people to make a group work better, more efficiently.

Frank - You know, Hovey, you had a whole career here. How many years was it now?

Hovey - Thirty.

Frank - Thirty years. You obviously loved it. You still love it. I guess I have to ask the question, why retire?

Hovey - I left an awful lot of things undone. My dear wife, I traveled so many wonderful places always promising her when I came home, when we can I'm gonna take you to some of the wonderful places. So I've got a big debt there. Home, she managed home wonderfully, allowing me to put so much of my effort into this wonderful job that I had. She still runs finances and the smooth operation of the home but the physical plant itself has sort of been let go, so I've got a lot of places that I could work and make things much better. We have some hobbies that we'd like to get involved in, in particular scrapbooking. We have suitcases of family photos that remain in suitcases. We have family members unaware of these photos and to be able to show them in an organized way would be great. So we're into that. Caring for the house, we're now more into gardening. Birding has taken on a new emphasis in our lives. We like classical music although her first love is the Chieftains so any time they're in Boston we'll buzz on in there. But we're also becoming very fond of all of the Gilbert and Sullivan operettas, so whenever there's a chance to take in one of these shows anywhere in striking distance we'll take right off and thoroughly enjoy that. Neither of us can sing very well but I think in our next life we're gonna pursue that avenue.

And we've become season ticketholders for the College Light Opera Company that comes every summer and presents shows at Highfield Theater. We've been doing that for a good twenty years so that we've worked our way down to the front row. We have two seats in the middle of the front row and it is such a joy - the live orchestra is right in front of you and you can almost reach out and touch the performers on the stage - so every Friday evening during the summer we treat ourselves to a very professional show. So lots of new and wonderful things to do like maybe going to Ireland and a couple of other countries that are special to us. But with all the friends I made at the Oceanographic I can't be away from them for more than a few days. So disguised as coming to check on things, having lunch with the carpenters, maintaining the box core equipment or perhaps teaching CPR and first aid I'm able to renew these wonderful friendships I've made over the years. And how about being a tour guide. I've been so enthralled with this wonderful place I really enjoy talking about it to the public. So the next thirty years of my life are going to be pretty busy.

Frank - Well I must say you're an absolute perfect example of the person who has a wonderful outlook on life and let it carry over into your job which made for a very nice work life for you. Just one last thing. I always give people a chance to talk about any issues they might like to talk about. Is there anything that you thought of that you might like to talk about? I know some of the ladies have talked about some of the women's issues.

Hovey - Right. Nothing really leaps out and hits me in the head. I was comfortable with the benefits program at the Oceanographic. Rose and I never thought we'd ever be rich. We grew up in families that worked for what they got. When we were first married we couldn't charge anything cause we had never built up any credit. I mean we paid for everything that we got. And now we've got a little nestegg put way that I think will carry us through and we'll leave our home to our daughter. Our extended family is doing quite well so beyond the concern of maybe a devastating health issue, and we really work at staying healthy, you never know, but still I think our future should work out just fine. I'm very happy with the way things have turned out over the last thirty years or so and hopefully they will continue.

Frank - Well I know for the most part if I have to get in touch with you I can check down the dock area for you and even though you're retired there's a pretty good chance you're gonna be there.

Hovey - Yup.

Frank - Hovey, I've enjoyed this enormously, I really have. There's been some great stories and you told a lot about what you are like as a person and, of course, that's what we're trying to get at because, as I say, Dow Chemical is a great place too but it's not the Woods Hole Oceanographic Institution. You seamen scientist types are a kind of breed of your own. Thanks much.

Hovey - Thank you very much and you've made it very comfortable doing this so I appreciate that.