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Crossen, James ~ Oral History Interview

Joshua Wrigley

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Voices from the Fisheries
166 Water Street
Woods Hole, MA 02543

Interview with James Crossen by Joshua Wrigley
Summary Sheet and Transcript

Interviewee
Crossen, James

Interviewer
Wrigley, Joshua

Date
August 8, 2016

Place
The Crossen home
Falmouth, MA

ID Number
VFF_WH_JC_001

Use Restrictions

Biographical Note
James Crossen was born in Boston in 1926 and served in the Pacific Ocean during World War II. This experience helped him during the 1,200^{+}days he was at sea during his long career. He began his career in 1955 with the U.S. Bureau of Commercial Fisheries which later became the National Marine Fisheries Service.

Scope and Content Note
Interview contains discussions of: Albatross III, arrival of Albatross IV, conditions at sea onboard research vessels, development of the first underwater camera system for counting fish, Image Orthicon camera tube, development of a fish egg counter, creation and use of a time-depth recorder and creation of the Alvin submersible.

Indexed Names
Baird, Spencer
Barnes, [First Name]
Bigelow, Henry B.
Boudreau, Larry

Clark, John R. (Jack)
Crossen, Mae Diffley
Crossen, Nicholas
Despres, Linda
Edwards, Robert
Galtsoff, Paul
Graham, Herbert
Kennedy, John F.
Loosanoff, Victor
Lux, Fred
Nichy, Fred
Posgay, Arthur
Raymond, Sam
Truman, President Harry
Twohig, Patrick
Vine, Alan
Wheeler, Charlie
Wigley, Roland

Transcript

Josh Wrigley (JW): This interview is being conducted as part of the Voices from the Science Centers project funded by the Northeast Fisheries Science Center. It's also a part of the Voices from the Fisheries project supported by the National Marine Fisheries Service Office of Science and Technology. I'm Josh Wrigley, Project Manager of Voices from the Fisheries, and today I'm speaking with James Crossen at his home in Falmouth. The time is about 10:00 a.m. on August 8, 2016. We will be covering a number of topics today including Jim's early career at Woods Hole, the Albatross III, the arrival of the Albatross IV, the development of an underwater camera system, and a few other things. So Jim, when were you born?

James Crossen (JC):I was born January 23, 1926.

JW: Where abouts?

JC: In Boston, Boston, Mass – in the suburbs of the city. At that time, I was one of five boys with my mother whose maiden name was Mae Diffley, and my Dad was a Boston police officer. His name was Nicholas Crossen, Boston Police, and again, as I say, I was born in 1926. It was a good year.

JW: Right before the stock market crashed just a couple of years later.

JC: Before the stock market crashed, that was probably, well, the stock market crash was 1929 and that was a tough ten years after that, but, of course, I was a very young lad, and I'm sure I didn't have too much of an idea of what was happening in those days. We've had some slight not depressions since then, but what do they call them?

JW: Recessions now.

JC: Recessions, ya, right. Those were the days when things were easy going, there weren't many jobs available. Tough times – fortunately for me and my brothers, my father had a job as a Boston Police Officer. My dad was in WWI [World War I] in the Army, artillery, when he was a very young man, 18 I guess, and after WWI, he lucked out in a way because they came home from the Army in WWI – they being the young men – and there was a governor at the time, Calvin Coolidge, and the Boston Police went on strike. Calvin Coolidge was apparently a tough governor – he fired every policeman in the City of Boston. My father happened to be the right age, and just out of the Army in WWI, and he got a job right away as a Boston police officer--

JW: Work was scarce.

JC: --which turned out to be pretty good because the Depression was coming on, and that meant we had food in the house and so we didn't think much about food, but we were fortunate.

JW: And you grew up in Roxbury?

JC: I grew up in Roxbury, in the days of, if I remember, nearby Roxbury Crossing, at that time 4 brothers – then later on there were two younger brothers. They were both in the Army. My three older brothers were Army in WWII, I was Navy, and my two younger brothers ended up in the Korea era in the early 1950s.

JW: What divisions were your brothers in during the war?

JC: My Joe was 14th Armored Division, he was a reconnaissance before the tanks, and he was with Patton in Sicily and Anzio. Then he went up through Italy and through the Rhineland Battle, and then on to the end of the war at the Battle of the Bulge. In my opinion, I think my brother Joe really went through too much.

JW: That was a lot of fighting.

JC: A lot of fighting. In later life, when he came home, he got married, had three boys, and he was drinking one night and he broke his neck – ended up 20 years in the Veterans Administration in Brockton. Kind of sad.

JW: I'm sorry to hear that.

JC: It's sort of ironic in a way when you think about it. Then my other two brothers, Nick and Al, Nick we call him Charlie. He was going to be a pilot, he had his pilot's license but unfortunately, he was color blind, as I later found out that I was color blind, too.

JW: And it was just you guys out of your brothers, right?

JC: The two of us out of six boys were colored blind. I understand that comes from the mother's side, I'm not really clear on that. But anyway it could be quite a problem when you

think about it, as a young man. Because when my three older brothers went in the Army, and I was next in line, the fourth, I knew from my older brother Charlie, that he was washed out of pilot training because he was color blind. He was the other one that was color blind. And then I found out, I had a heads up because I knew I was going to have a problem if I wanted to go in the Navy, but I had to fudge through that and I got through okay, I suppose. But you know, you think about it now and there was nothing wrong with being in the Army, I guess, but when you hear about your three older brothers going through Normandy, two in Normandy and one in the Battle of the Bulge from starting with Patton in Sicily, Joe the oldest one, so you know, those guys and anyone knew that at the end of WWII, very seldom did any of those people, soldiers that saw action – they just didn't talk about it.

JW: Well, at that time Post Traumatic Stress Disorder wasn't really acknowledged.

JC: That's right, and I guess you have to think about the times and I remember when my three older brothers got home after WWII, when I arrived back home at a later date, after I was in the Pacific on a light cruise of the Biloxi CR Lady, and then I didn't have quite enough points to come home at the end of the war. After the two bombs were dropped in Hiroshima and Nagasaki, at the orders of President Harry Truman, I got home and by that time my three older brothers, of course, were home because I didn't have, as I said, enough points so I was transferred to Amphibious where we landed the 1st Cavalry soldiers who occupied Japan . And some of the exciting things about that was when we landed in Yokohama, Japan I have some photos of young Japanese children, of ages looked like probably 8 to 11, and they were, of course, hungry, and when we landed on the beach, these kids were just were just hanging around the beach, of course, and so sailors eat on a sofa like platter – so after we would eat, we would go out on the fantail of the ship which was on the land then, on the sand, and we would give what we had left over on our plate to the Japanese children. I have a couple of photos that I can show you later on and I keep in my wallet one picture of the first day we landed in Japan in Yokohma. But that was some months after, of course, the war ended. Now where was I . . .

JW: So after the end of the war, you wound up coming back to Boston right?

JC: Yes. I grew up in Boston, and at the end of the war, I came back to Boston and one thing that I recall is that when we got home, they had what they call a 52/20 club. That meant you got $20 a week for, God forbid, 52 weeks – but, of course, not many. . .

JW: The unemployment of the day?

JC: Unemployment, yeah. 20 bucks a week for 52 weeks. But very few went that 52 weeks. I remember one day leaving my family's kitchen and my father, who was a policeman as I said, said to me "Did you ever think of getting a job?" and so by that time my three brothers, of course, had jobs and they were married and so forth, but my oldest brother Joe, the only thing I remember him saying to me was "You can take your sailor suit off, the war's over."

JW: That was his advice? [laughs]

JC: [chuckles] that was his advice to his younger brother. Yeah, it's funny how when you think about it now, but after . . .

JW: Let me just close the door here because the recycling truck is outside.

JC: Ok. Yes. We didn't think of that.

JW: I'll open it back up again in a minute. I just didn't want the noise of the truck to overpower the recording.

JC: I didn't think of that, yeah. Ok, so where were we now? You didn't need to stop it?

JW: No. It's still running. So then you wound up going to school in the Midwest though, right?

JC: Yeah, I ended up; all my three brothers went to school in Boston.

JW: Was that on the GI Bill?

JC: On the GI Bill. Yeah, and so I, after hanging around the corner for a couple of months, when my dad made that comment that I should think about getting a job, I remember that I one day I left my family's kitchen, and that was on my mind when he said you have to think about getting a job. So I went down, we lived near a big park in Boston, in Roslindale – Healy Field they called it, it was nice, three baseball diamonds and a football field. I remember when we moved from Roxbury to there, I remember all of us and in my dad's old LaSalle car, it was a big car, and at that time there were five brothers, the sixth one hadn't been born yet, and my dad, when we got to the new house in Roslindale, my dad said "OK, that's Healy Field, go over there and when you get hungry you can come home."

So, that morning that he suggested that I think about getting a job, I walked over to the field, and there was a gentlemen sitting on the park bench, and he was reading *The Boston Globe* and I shared that comment with him, that I've got to think about a job, so he looked in the paper and next thing you know, he and I are in Boston, and we're by the Copley Plaza Hotel – big hotel in Boston.

JW: Is that off Copley Square?

JC: Copley Square, right in the City of Boston, so I happened to see in one of the suites upstairs there was a gentleman there. I thought I was being interviewed for a job, but this gentleman was interviewing people to go to school, to go to college, and there's only one of my older brothers who in the early days went to college, Northeastern University. He became a lawyer later on, and my other younger brother became a lawyer, so we had two lawyers in the family.

For some reason, I got talking to this gentleman, and next thing you know, he was saying would you like to go to college. I thought that sounded like probably a better idea than getting a job [chuckles], so next thing I did was I signed up on the GI Bill to go to collegeto a technical institute in Chicago.

JW: Was that DePaul?

JC: No. I went to DePaul to take elective courses because this technical school, they had some English and languages, but it was pretty much an engineering school. Well, a lot of WWII veterans went, because we did what they call a trimester, you could get your four years done in three years, and I imagine there are still some schools maybe like that, I don't know. But that was very inviting, you know, three years, and so that's what I did. I corralled two of my buddies who were also thinking probably of getting a job and I said "How would you like to go with me to Chicago to go to college?"

JW: So had you been doing engineering work when you sailed on the *Biloxi* during the war?

JC: No. When I was in the Navy, I was a signalman. A Quartermaster -- so that meant you, the Quartermaster in the small ship on a light cruiser you pretty much did signaling, as signalman, and some help these line offs on navigation. So I had no experience in engineering at all, whatsoever. Although, during the war, I worked in the shipyard for about a year before, part of my senior year of high school, and will I share with you that one of my school buddies, Larry Boudreau and I went all through school together and one of us decided, why don't we join the service and we went to take a physical, and the way it worked out, Larry Boudreau was taken by the Marines, I was rejected because I had a hernia, so I went home and I could live with that hernia playing football because I could get through it okay, no problem. So where was I now.

JW: You were just talking about you and Larry Boudreau signing up.

JC: Larry Boudreau and I went in and he got picked by the Marines, my three brothers at this time were in the Army serving overseas, Normandy, and Joe was Sicily, and Anzio in Patton's Third Army, and so anyway we got back to Larry Boudreau was took by the Marines. I was rejected, I was sent home to get my hernia fixed and then come back, but Larry was unfortunately a good buddy of mine in high school, and Larry unfortunately was killed on the first landing at Iwo Jima, so life is funny. . . that's fate. So I was fortunate I went on to college and studied engineering.

JW: In what year did you start college then at the Institute for Technology?

JC: I started college in 1947, there abouts, and so myself and my two buddies I grew up with went off to college and neither one of those two was really into college every much, but we were in Chicago, so that was – the two buddies of mine went back home eventually, well one stayed in Chicago – but they left school. So I took courses at DePaul and studied engineering at the American Institute of Technology in Chicago, which was a big school at that time for returning GIs who wanted to get into that field.

JW: How did you settle on engineering as an educational field?

JC: You know, I never had any engineering education at all in high school. I probably was an average student. I worked in the shipyard the year before I went in the Navy in my senior

yearof high school since the Marines didn't take me, I went to work in the shipyard – Hingham Shipyard, just south of Boston, but there I was a ship-fitter's helper, and within maybe a matter of three or four months, the ship fitter that I worked for, that I was trained under was called, drafted in the army so I became, at a ripe old age of 17, I became the ship fitter, in what they called the steel mills.

JW: That's a way to move up quickly, I guess.

JC: Yeah, I moved up quickly. Since I was color blind, the Marines didn't take me and the Navy apparently didn't want me either, so it meant going in the Army which I really wasn't too interested in going in the Army.

JW: Except you wound up in the Navy eventually.

JC: Eventually, I found a way to get through some physical checks and I wound up getting into the Navy and serving at first, up in Portland, Maine on a patrol boat off Casco Bay in Portland, Maine where a lot of the ships lined up to go to Murmansk and other ports during WWII. But then sometime later, I had the opportunity to ship out, to leave Portland, Maine doing patrol duty, and I picked up the light cruiser, *Biloxi*[C.L. 80], on the West Coast [in San Francisco], which got me to the Pacific. And then of course, when we were on our way to Okinawa on the *Biloxi* light cruiser, the war ended. I was transferred to [an] amphibious landing craft and [landed on the Japanese mainland at Wakayama].So I spent, I think, 5 months in Japan [doing] Occupation Service.

JW: During the occupation?

JC: During the occupation, Yeah.

JW: So when you finally graduated from the Institute of Technology, did you head back to Boston immediately or did you stay on in Chicago?

JC: Yes, I came right back. I came right back to Boston. I'm the only boy in the family that had really left Boston. For some reason, this is the way it worked out. I decided to head back, although some of my college buddies went to work in Chicago and stayed there for their engineering career. I decided to come back for some reason. And then I got a job with a company called Sanders Associates as an engineer. We moved from Waltham to New Hampshire with that company, Sanders Associates, and then I got married the following year and my wife and I were up in New Hampshire and both wanted to come back to the Boston area, and eventually Cape Cod which we thought would be a nice place if we could settle in Cape Cod, which we were very fortunate to.

I was working for Hanscom Airfield when I left Sanders Associates in New Hampshire, at the Hanscom Airfield just north of Boston, and one day I saw on the bulletin board the Woods Hole Laboratories were looking for an engineer to set up an underwater observation program – and the next thing I know, I'm working in Woods Hole. I had my background of television, and so that was a big help for me because as it worked out, the job I got with the Department of Interior in

Woods Hole was to start an underwater observation program under the direction of a biologist, Jack Clark.

JW: And this was when it was known as the U.S. Bureau of Commercial Fisheries, right?

JC: It was then known as the Bureau of Commercial Fisheries. I believe the Department of Interior, and that was at the Woods Hole Laboratories.

JW: So what year did you finally make it down here to begin working here?

JC: Let's see . . I got married in '55, and I got down to Woods Hole…well, I got married in '53, 1953, and got to Woods Hole in '55, and so I spent my whole career at the Woods Hole Laboratory, at the Fisheries Lab. And one of the first projects was to start an underwater television program which was very early in the days of, especially underwater television.

My memory was the Office of Naval Research had some underwater cameras, and so getting connected with them, we were able to have a contract through a company in Ohio to build our camera, which was in those days called a Studio Camera was an Image Orthicon Pick-up Tube which are very sensitive to light – which worked out good under water. Until later on, of course, after we got some very good photos of fish in the auto-trawl, being caught in the trawl, escaping from the cod end of the trawl, we did finally have a leak in the camera – but we were able to get that back online fortunately because we had an engineer on the *Albatross III* who was a really good engineer. I took the camera, after we brought it back on board, we lost the whole trawl gear on the ship, on the *Albatross III*, and we were able to get the camera back in operation.

JW: About how much lighting was required to illuminate the footage?

JC: Well, when we went say 20 fathoms deep, yeah, we did have a problem with lighting, and we used these 1KW, 1,000watt, underwater lamps which were used by the Navy divers and we were able to illuminate – of course, underwater, the turbidity of the water is such that you couldn't get much depth of field, but probably enough so we could see in the fishing trawl while we took pictures of the fish coming into the trawl, on a bottom trawl that is, and the fish escaping from the cod end. We were able to get some very good pictures, films. We didn't in those days, of course, we didn't have the cameras they have today. Studios had pretty fancy equipment to synchronize the time frames of the TV vs. cameras.

JW: How many frames per second was your camera operating at?

JC: Well it didn't operate on the basis of that, but it was close to 24 frames per second. But on our movies that we made, you would see a flicker effect. That was because of the difference between 30 cycles which was a sub, from 60 cycles with the power frequency, our camera was tied to that 60 cycles. But the movies were 24 frames per second, so we had a little flutter in the early movies.

In general, we were the first, probably the first people in the Fisheries to get photos of fish being caught live on an auto-trawl on the ocean floor, and escaping from the caught end of the trawl.

So Dr. Graham, who was the Director of our lab, was very, very happy about the results of getting photos that showed the operation of the fishing trawl. Many of - well, all of the fisherman - never envisioned that they would see live, on camera, fish being caught in their trawl on the ocean floor. Some people thought, wouldn't that be a great idea if fisherman of bottom trawls, could see their camera catching fish live while it was on the ocean floor. I don't think that really happened, but it did happen with our research.

JW: So did Dr. Graham hope to use this footage for stock assessments?

JC: Yes. That was the main focus of that. At first, it was just the idea of being able to see live fish being caught, because we were the pioneers in that, it was the fisherman on the East Coast; they were quite impressed when they came by our cameras, live, after they set their trawls. Most fishing is done now through stern trawlers.

JW: Western rig draggers?

JC: Western rig draggers, yeah. In the days of our early years on *Albatross III*, it was a side trawler.

JW: I saw that on the movie that you just showed, and they were putting the net over the side.

JC: Yeah, they set the net over the side. Maybe five or six fishermen would throw the trawl over the side of the ship while the ship was steaming and the two doors that kept the net open, those were eventually set out with the wires and we had them set out--

JW: Were they put over on the same side as well?

JC: Yeah, on the same side while the ship was steaming so as not to get the ship's propeller entangled in the cables because there were two trawl wires for the netting, the otter trawl, and the one wire for our camera cable which was a 28 conductor cable which was normal in the studios and live TV. They'd have 28 conductors.

JW: How long did it have to be?

JC: Well, we had 1,000 foot of cable so scope is usually 3:1. If you're fishing in say 20 fathoms, 120 feet, you'd have three times that scope of wire out. So you had to be very careful because you didn't want to get the propeller near any of the wires, of course. We got good results. We were very fortunate at 20 or 30 fathoms, we had enough light in the daytime so we could see it okay, and then later on, we did do some lighting but again, that restricted your distance when you had lighting – the scattering layer you know, it'd reflect all different particles under the water.

JW: Where did you do most of the tests?

JC: Most of the tests were done initially off the coast of Cape Cod.

JW: Up off the backside, or down in our region?

JC: Up off the Provincetown area, the east side of the island. We did some work in the inner Cape Cod Bay, early work.

JW: How far off shore were you?

JC: Well, eventually we went to what they call Stellwagen Bank, and that was probably 30 miles off shore, and in a shoal, you know, like 20 or 30 fathoms. At that depth, we had enough light, because this camera which was called the Image Orthicon Camera pick-up tube which is very similar, it was actually a studio type camera that they used in studios, so we had to take the design of a studio camera and put it into a cylinder which was done by a company contract to us in Woods Hole, Diamond Power Specialty Corporation in Ohio, and they made camera for us and they made several cameras similar to ours for the Navy. What the Navy did, of course, I don't know, they didn't relay that to us.

JW: Classified?

JC: It was classified,yeah.

JW: What was the most challenging aspect of developing the camera?

JC: Well, you know since it was built in Ohio, we had to write specifications but we did have some help with the Navy on that, and our camera was a one camera contract and we had to give them how deep we wanted it to operate, how much light we would have – so it had to be a very sensitive camera pick-up tube as I said before, it was called an Image Orthicon studio type pick-up tube. This is back now in the 1950s and cameras were very expensive.

JW: Around 1955, I guess, when you first came onboard?

JC: '55, when we first started. We were able to get pictures without illumination down to about 20 fathoms on a nice sunny day, on a sandy bottom – the Image Orthicon camera was very sensitive. I think the insight on that was very good because there was another camera come a little later called a Vidicon, but it wasn't as sensitive as the Image Orthicon, so that was a good move, it was a good idea by our head biologist who started this program.

JW: And that was Jack Clark?

JC: That was John R. Clark. Jack Clarkwas a biologist from Seattle, he was in the Navy like myself, both Navy guys, and so it was the early days of television really. To take pictures off the TV screen, we had to use a process called kinescoping which studios used, but studios had enough money and resources to synchronize so you didn't see that flutter effect which we had.

JW: Oh the flickering on the screen.

JC: The flickering on the screen, yeah, because of the difference between 60 cycles which is the power frequency and the submultiples of 30 cycles, 60 cycle and the effect was that flicker. It wasn't a big problem for what we needed, for a studio it would have been a problem. But it worked out, it worked out very good.

JW: How much funding did Clark originally secure for the project?

JC: You know, that was a big surprise to me because I went to work down there in Woods Hole and, of course, I hooked up with Jack Clark, he was my boss, he was a biologist, and I was the first engineer that was hired at the laboratories, and then Jack Clark and I became sort of a duo – he was a hard working biologist and, of course, I related to my wife "Boy, this guy Clark, he's a real work driver." But I said "as long as he stayed with me, it was okay with me," because we put in a lot of long days and nights doing the first, getting started in this program. So I give him a lot of credit. We first started out, we got this camera from this company in Ohio and we tested it in a pond on Cape Cod in relatively clear water.

JW: Do you remember which pond?

JC: It was down around almost to Chatham, the tip of the cape, it was very clear. I don't remember the name of the pond but it was clear water, relatively clear water. So that's why we did our early trials.

JW: How did those fair?

JC: We got some good results and then eventually when we got the gear going and the cables made. We had to have a special cable made from a cable company with 28 conductors, and I often wondered what would happen when we cut our cable – because you had to splice 28 wires into that cable, and three of the wires were what they call coaxial cable so that took me, if we had to cut into the cable, it took me 6-7 hours to make a repair.

JW: To be able to locate the coaxial cables that are inter woven there?

JC: Yeah, to make a splice in the cable.

JW: Wow.

JC: This cable was almost an inch in diameter, and by the time we got it spliced and taped up it was three times that diameter but only for a couple of feet.

JW: How often would you have to make repairs like that?

JC: We were fortunate because we were well into our work before we had a problem with a cable. But it was always there, we were fortunate that it didn't happen early on getting started on the TV because we were very fortunate. I would say someone was looking down on us fortunately for us. We only had one camera, the Navy had 3 or 4 cameras that they told us about, I don't know how many more, but the Image Orthicon was a very sensitive camera as I said – to

replace that camera tube in those days, it seemed like a lot of money at $1,200 if we lost a camera tube. Be in all the tubes there . . .

JW: You mean the outside housing that would prevent water from flooding in?

JC: No, no, the pick-up tube itself. It was sensitive that shown through a 1" plate glass on the housing of the camera housing on the front, it was one inch thick, the front of it.

[phone ringing]

JW: I can pause the recording if you want to answer that.

JC: No, we'll let it go.

JW: Ok

JC: Well, you might pause.

JW: Let me pause it.

[return]

JC: Before we went on the ship and about 10:00 at night, he says we got to go in to see Dr. Graham, I said "Jesus, Jack its 10:00 at night." And he says "well, I want to see him tonight." They were in bed Dr. Graham and his wife. I said "Oh geez," but anyway, he had to talk to Graham about something. Graham lived to 102, Dr. Graham. He was the Director of the lab when I got there and for years later. He's quite a guy. I guess he was on the research vessel in the Pacific. They were plotting the magnetic fields . . . Carnegie was the name of the research vessel, the Carnegie. You've heard of Carnegie Institute.

JW: Yeah, Yeah. This was during the war? I guess in the immediate aftermath?

JC: Yeah, well, this is when I went to work in Woods Hole.

JW: So what did Clark want to see Graham about so late at night?

JC: I don't remember, but he thought it was important that he see him, but Graham was in bed you know. I thought that was. . . Christ it can wait till tomorrow. There's my daughter Jamie, Yeah, [pointing to a photo] she went to Boston College and her husband and their baby, who's now 29 years old, and he studied at Babson, Finance, so he works with his father now. They have a chain of stores, they have sports bars up in Marshfield, Plymouth, Hyannis and they're going to open up in Quincy. Do you know these areas?

JW: Sporting goods?

JC: No. Sporting bars – hamburgers, beer.

JW: A restaurant?

JC: Yeah, a restaurant.

JW: That's great.

JC: Yeah, so he's living in Boston but he wants to move to Quincy and get a condo. He stayed here and upstairs. We have two bedrooms and a bath upstairs, but he prefers to sleep in the TV room in there which used to be the dining room.

JW: So, going back to Clark here, I think you said when we were talking before that he had initially managed to secure something like $30,000 in funding.

JC: He took someone in Washington in the Department of the Interior, of the idea of investing $30,000 in a camera to see if we could get pictures of fish being caught in the auto trawl offshore. It was, I guess, when you think about it now, he was quite a, he had foresight you know.

JW: He was really pioneering.

JC: He was a pioneer, yeah. We were pioneers because we had to hook up with the Navy to get a contract done to get a camera made.

JW: So did he secure that funding year after year, or was it just that one time?

JC: No, I think it was a one-shot thing $30,000 my memory to get that contract and we got connected with the Office of Naval Research somehow, I forget the guy's name now, but I got connected with the guy. When I first went to work down there, we were just planning, in the planning stages and to get a TV camera because I studied television engineering in the company in Chicago, I mean the school in Chicago, DePaul for elective courses.

JW: And then worked amongst TV in Kenmore Square as well.

JC: And I worked among TVs until I got a job, you know, an engineering job. So it's funny how fate carries you to different things you know. You never know what avenue you're going to be going on. But he had the foresight, Clark did, and you know him. . .

JW: Do you remember what brought him out here from Seattle? Why he came out?

JC: He came from Seattle, and he went to school in Seattle. He studied biology, and he was a bright guy, and he was sort of a dynamic guy because he was like the number two guy at the lab – a young biologist.

JW: Under Graham?

JC: Under Graham. Dr. Graham, as I told you was, when he first got out of college I guess, he was on the research vessel Carnegie, that's a big institute isn't it, the Carnegie Institute? I don't know where they made their money.

JW: Oh the Carnegie family I think, well Andrew Carnegie made his money in steel in Pittsburg.

JC: There you are. So he had a vessel built and the downfall on that though, what happened to it, is Graham got a job as a scientist, a young scientist onboard. It was his early years. He went to college in California I think.

JW: So, this must have been before Graham assumed the directorate at Woods Hole.

JC: Oh Yeah. Long before. He's probably working on his Ph.D., I imagine. The Carnegie which was doing magnetic lines of force in the Pacific, research, they tied up in Pago Pago Island in the Pacific.

JW: Is that down near the Solomon's somewhere or maybe Polynesia?

JC: Yeah, I guess so, because I have a buddy who is a retired Coast Guard Admiral, we meet for coffee and we meet Tuesday night at the 99 Restaurant – 4 of us, my son-in-law, Admiral Jack, myself and one other guy who was on the *Hornet* in WWII in the Pacific – I have it right here, see the *USS Hornet*? [points to a photo] He was on that *Hornet* three years in the Pacific.

JW: Oh, an aircraft carrier.

JC: Yeah, and so but the Carnegie, they were gassing up, or fueling up in Pago Pago, American Samoa, and the captain and the steward got blown up. The ship, I guess, they were fueling up.

JW: Oh, there was an accident?

JC: And it was an accident and it ignited and blew up the ship. When Dr. Graham went back to the ship from looking uptown in Pago Pago for specimens, there was no ship. It was so many feet down below the dock there.

JW: Wow. Lucky for him that he decided to go off specimen collecting then. That's pretty incredible.

JC: Yeah, incredible. The Captain and the Steward were killed. So that was the end of that Carnegie.

JW: So several years into your tenure here at Woods Hole then they commissioned the *Albatross IV* down in Slidell, Louisiana right?

JC: Yeah. Arthur Posgay was a biologist and I were detailed to see the ship being built in Slidell Louisiana in the Bayou near New Orleans. I was looking at the engineering, the ship

navigation equipment and so forth and Posgay was looking at the winches, you know, the winches and so forth. And so the two of us, and then came getting close to having the ship launched when it was aborted as we talked about earlier. They slid them in, they didn't launch them like, you know, a usual launching way, and there was an accident because part of the bow or the stern got hung up on the land so we had to go bring derricks in and bring it up and try it again some days later, I guess. And so Dr. Graham. . . .

JW: But they got it the second time though?

JC: Yeah, the second time they launched it in the bayou, it just slid into the water and it was alright.

JW: And nothing happened.

JC: Yeah, and I remember the shipyard supervisor, he ran on board as soon as it was launched because they remembered a plug in the bowels of the ship that had to be secured, you know.

JW: And this was in 1963 right?

JC: Ah, let's see now. . . Yeah. When the Cuban Missile Crisis, I think was '62, 1962? Posgay and I were not sure, we thought we might sail the *Albatross IV* back to Woods Hole, but Kennedy at that time was talking to Khrushchev because the Russian ships were bringing in the missiles to Cuba, Cuban missiles, which were pointing towards the United States and so Khrushchev and Kennedy were on the phone and in the meantime our Regional Director from Gloucester called us up and said "I'm coming down." He came down and he said "we're going to all fly back home because there's a ship blockade – the Cuban Missile Crisis."

JW: You wouldn't be able to go around Florida then?

JC: Wouldn't be able to go around, so that ended that idea of coming back with the ship. But that morning that the ship arrived in Woods Hole, Dr. Graham, Arthur Posgay, and myself were going to go out into the channel in Woods Hole to get on board and then come into the dock, but I was a little late, so Graham and Posgay went out and I, as I say, it was a rainy day, so I was too late, so they went out, but no problem. I stood on the dock when they landed. That was 1963.

JW: What were your initial impressions of the new *Albatross* as opposed to the *Albatross III* that you had worked on while developing the underwater camera systems?

JC: Well, you know it looked like…Well, the *Albatross III* wasn't too impressive, it was an old fishing trawler, but maybe I mentioned it to you, Josh, that when the *Albatross*, when we got the *Albatross III* – which was called the *Harvard*, the fishing vessel out of Boston.

JW: Right, that's what it started out as.

JC: Yeah, and when we saw this vessel being built in Louisiana, we said "that's a nice vessel." We had the latest navigation equipment and so forth.

JW: So you saw it as a big step forward?

JC: Oh Yeah! A big step forward because I sailed on the *Albatross III* and that wasn't the best vessel because the Coast Guard took it over in WWII and added about 30 or 40 feet mid-ship so it was long and not much of a beam. There was a story. . .did you interview Wigley, Dr. Wigley?

JW: Not yet. Hopefully soon.

JC: Well he went on a cruise about the same time that I moved the radio telephone from the main lab which was here, the aquarium from the main lab was right here – there was a brick first floor.

JW: This is a photograph of the main lab that we're looking at here.

JC: That's the main lab -- that was the aquarium where people came to see the aquarium in the early days. You know, way back . . .

JW: This photo must be from pretty close to the turn of the 20th century I'd be thinking.

JC: Oh Yeah! That's right, let's see. . .

JW: So the basic structure of the Woods Hole waterfront pretty much remained the same until they built the main lab as it stands now.

JC: Yeah. The lab as it stands now, that's because Posgay was upstairs in this building, Dr. Edwards who became the Director of the lab, and you've heard his name? Bob Edwards, he had an office right in the front here, and I had the office in the front next to him. We shared a telephone in those days, imagine that, we shared a telephone. If the phone rang, we didn't know if it was for Dr. Edwards or me.

JW: Who would usually pick up?

JC: He'd pick up, and he'd begrudgingly say "Jim, it's for you." [laughs] That was the early days, you know? Not like today. But that was what it looked like when gentlemen named Spencer Baird came up as an emissary from Washington from the President, I guess, to look for a biological laboratory.

JW: In the 1870s, right, right, when it was the U.S. Fisheries.

JC: U.S. Fisheries, and they came up here and there's a rock outside the lab that's there today which says Spencer Baird on it. I don't know if you've ever seen it, so Edwards and Lux, Fred Lux was a biologist, they had the first office, the one right side, and I moved the radio telephone from this building over to here, and that morning that Wigley called in with radio report he said we were in a storm, he didn't chatter much on the radio – he'd say here we are, where we are –

we're in a storm. And according to Dr. Wigley, who you're going to interview, I don't know if he'll mention this or not, but when they got back from the cruise, and they made it back, but they thought they may not come back because the ship was laying over.
JW: It must have been a serious storm.

JC: Because remember this, the *Albatross* was called the *Harvard* when it was a fishing vessel.It was about 130 feet long, the Coast Guard added about 40 feet of mid ships so it was about 180 feet. It was long. Not much of a beam, so it was lying over. So Wigley, when he got back talked to Dr. Graham, and they decided to keep it quiet until a later date when Wigley finally published it in the local paper about that storm.

JW: The vessel was lacking in stability.

JC: Yeah. Well I guess it was . . .

JW: Did the Center wind up doing anything to try to modify the ship to correct that, or did they just leave it like that until the *Albatross IV* came up.

JC: That's what it was really. I remember my early days going to sea in 1955, it laid over pretty good sometimes, you know. The navigation guys knew that you know, there was a certain period when it might lay over and it'd come back, but it could have been scary. To Wigley it was scary, and as I said, he later wrote a story about that trip because they came close. But that wouldn't have been good PR.

JW: No definitely not.

JC: You can't send these young people to sea on a ship that's not seaworthy. But in WWII after the Coast Guard added 40 feet to it, I don't know why they did, or how they did.

JW: Right, that must have changed the center of gravity.

JC: Yeah, and so nothing happened to that ship for a long time. AT&T used that ship to look over these transoceanic lines before we got it in '55.

JW: And so then the *Albatross III* was decommissioned in 1959, right?

JC: Yeah, *Albatross* was decommissioned in 1959.

JW: Were you still working on the underwater camera project at that time?

JC: No. That project ended. That project went from '55 for about 4 years. And as they say, we got good pictures of fish being caught in the auto trawl, and escaping. We put the TV camera in the cod end, we hung it from the head rope of the net. Have you ever seen a trawl?

JW: Yup.

JC: And we hung it

JW: Yeah, I saw some of the footage there of the roller gear going across the bottom.

JC: Yeah. So we hung it from the head rope, looking at the foot rope and we put the camera all over. We were very fortunate, I think.

JW: So how would you actually secure the camera because it looked like it was a fairly bulky instrument?

JC: Yeah, it was five feet long and it was about nine inches in diameter.

JW: How much did that weigh?

JC: It was pretty heavy. Usually there'd be two of us who would carry it. It was quite heavy. And it had, in those days, it was tubes, not transistors. It didn't have transistors in those days. I think the first two transistors were developed by Bell Telephone labs, the 721 and the 722, NPN and PNP. That's the way they give the transistor. But as I say, Bell Telephone used the *Albatross III* to look at the transoceanic lines because fisherman in those days, on occasion, not too often apparently, would get their fishing gear entangled in the cable, and there was at least one report that they hauled up on their winches, the cable, the transoceanic cable, and cut it to get their net back

JW: [laughs]

JC: The Bell Telephone labs said they had a big program of educating the fishermen, "Please if you get your net hung up, let us know, we will take care of all your equipment. We'll replace everything, but don't cut the cable." That was a big cable. I think it's still laying on the ocean floor, of course, they probably don't use it much today. It's from the early days of communication from Great Britain and the United States.

JW: Right, right.

JC: It went south of Nova Scotia there.

JW: So how exactly would you secure the camera to the trawl? Did it have clasps on it that would hook on to the mesh?

JC: Yeah, we had brackets from the camera and we had chains that we hung it in different fashion and we were very fortunate. I would have to give a lot of credit to John Clark for his early work on getting that program going. The fact that we piggy backed off of Navy Research to get the camera, they, my memory was that they probably ordered three or four for themselves. But, if for example, we had a problem with the camera in the early days, and we lost it, I think it would have been the end of the program. I don't think that they, they may have, I don't think they're going to come up with another $30,000. That was in 1955.

JW: A lot of money.

JC: A lot of money, especially for the fisheries lab, I think.
JW: What was the reception of the Department of the Interior when you wound up showing them the footage that you had?

JC: My memory was that the pictures we got were really the first; we were the first to get any pictures like this of a fishing trawl in action. Fish being caught. It hadn't been done before. We were, I guess you would have to say pioneers of that field because the vision of Clark and some others, of getting a sensitive camera, as I said, the other camera that came along a little later was a Vidicon camera which was a small camera. It wasn't as sensitive.

JW: Was that one that the Navy worked on developing?

JC: You know, I think so. The Office of Naval Research, they were involved in that in the early days, obviously, because I hooked up with a couple of the Navy engineers, and it just fell in place so to speak, because we didn't really . . . Clark may have had ideas about how we were going to do this, but we ended up, as I say, with the Office of Naval Research and piggy backing with them writing or specs for, I wrote the specs for our camera, which was very similar to theirs. A few changes. And the only other person who had a camera in those days was a Dr. Barnes from Scotland and his is some kind of a TV camera but he didn't use it at sea, he used it in shallow water for some of his studies. Dr. Barnes of Scotland, yeah.

JW: After the conclusion of the camera project then, how did you wind up shifting your focus at work? Were you working on the technological systems on the *Albatross IV*?

JC: I got involved with several devices. I built a fishegg counter. There was a British guy who had some kind of a device that counted fish eggs. You know how biologists in the early days they would look in the microscope and go "1, 2, 3, 4 etc." Well, I somewhere saw this paper, this early paper of a fish egg counter, so after the TV program, we wanted done – done, it was finished, and they were very happy with it. Dr. Graham was able to bring those films to Europe, to Copenhagen I think it was, where they met with something like 7 or 8 countries fishing in the Atlantic, and so you know it was a big, I think a pretty big thing because they showed the actual live, we were the first to take underwater pictures, live, of fish being caught in the trawl.

JW: Did other countries try to duplicate your efforts?

JC: I think the Canadians had a camera, but I don't think they tried to do anything like putting it on a trawler or anything like that. I think we were the first to do that, to put a camera at 20 or 30 fathoms in the ocean to take pictures. So we were lucky in a way, I guess, to get good pictures, to get through it without any major problems. So I don't know if you've ever . . . well let's see, this here showed a couple of, showed us kinescoping, taking pictures off the TV screen, it's the way they did it in the early days before they had the digital, so I guess we were pioneers in that field.

JW: And with the fish egg counting project then, how did that device work?

JC: My memory was the biologist…I shared a lab with Dr. Edwards for a while, he and I in the main lab that's there now, and so when things were slow at that time, wrapping up the TV work, I read about a fish egg counter so I got the go ahead from Dr. Edwards and Dr. Graham to work on a fish egg counter – so we developed a fish egg counter to quickly count.

I remember when the Assistant Secretary of the Interior came to visit us in Woods Hole, and he came in the lab as it is now – the front door, and we had a set-up so when the Assistant Secretary of the Interior came in the front door of the lab and we had, when he went into the room, which I shared with Dr. Edwards, we had a TV camera set up so he could see himself on TV and then when he turned into the room, he could see this device which I wrote a paper on it and I have it somewhere about the fish egg counter. He remarked "While I've been here, in a few minutes, how many eggs have you counted?" and my memory was that maybe we might have counted 1,000 eggs, you know. The biologists go one, two, three, four, you know. So it was quite a thing. The negative of it was occasionally the fish eggs would get hung up in the narrow restriction – we had a photo light with a pick-up tube.

JW: How did the machine work physically? What was the set-up?

JC: When the egg went through the passage in the tube, it blocked the light, so we had an electronic counter. Every time it was blocked we get a count, and it would go pretty rapidly. We'd count quite a few eggs whereby the early days they'd go with a microscope one, two, three. . . we'd go like 100 eggs at a time.

JW: So you're moving eggs through a narrow. . . tube?

JC: Through a tube, Yeah. Through one flask into another flask with water drawing through the tube. Every time it blocked that photoelectric light, you'd get a count that would be one egg. And then we had a device called a Time/Depth Recorder which we put into a head ropefloat you know the head rope floats?

JW: Yeah, right on the front of the trawl?

JC: Yeah, the front of the trawl, they line them on the head rope – there's any number of to keep the head rope up.

JW: Yeah, to keep it open?

JC: Open, Yeah. We took one of those devices, one of those head rope floats and, there was a company in Falmouth called Benthos way back, a guy named Sam Raymond. He had quite a company up in North Falmouth, and in the early days when he had the idea of starting this company, I brought one of these head rope floats up to his office which he had in a garage, and so we imploded it to see what pressure it would take. We used that idea to have a hemisphere that would house this Time/Depth Recorder which, when we got it developed I would bring it over to New Bedford to the fishing trawlers and give them a head rope float and they'd put it on their trawl, and when they came back off their trip, I would go over and pick it up and bring it

back to the lab and we'd run it on a recorder and we'd get a picture of how many tows they made for their trip, how deep were their tows, how long did they tow for each tow – so we'd get a running list of a catch per unit of effort. I think in the end it didn't get widely used because of the people to bring it over to the fishing trawler, pick it up, and put it through the you know. . . it was, I thought a good device. I wrote a paper on that, and it's somewhere. Time/Depth Recorder.

So things like that. I developed different ideas, you know, to enable the biologists to help get the job done faster and so as it worked out I was able to save my career at the lab, and then of course we went through the *Albatross IV* being built, you know, myself and Julius Posgay. So we did all kinds of different devices, and of course we had to go to sea and keep the equipment going.

JW: How frequently did you sail on the *Albatross IV*?

JC: Well I actually, I think Linda Despres said I went to sea 1,200 days over a period of time. She went to sea more than I did. I think she was the longest – the person who went to sea more times than anyone else. We'd go to sea for probably 10-14 days at a time.

JW: And during that time, what were your primary responsibilities?

JC: Well, to test different devices that I developed and to, we didn't in those days have a technician to maintain the equipment if a radio/telephone broke or the sonar broke, or the radar broke you know, which when I went back to college, we hired Pat Twohig, that would have been, I guess 1962, let's see, no. I got hired in '55, so some years later we had to have a technician, an electronics technician that went to sea with us in order to keep the equipment going. So that was the year that I went back to college to finish up my last semester – which the government was very nice about. I looked on the bulletin board one day and it said "to improve your engineering knowledge, or whatever your discipline was" and I saw that on the bulletin board and that's how the government sent me back to college for a semester.

JW: And was that at DePaul?

JC: That was at DePaul and American Institute of Technology.

JW: OK

JC: That worked out very good, I mean for me and I think for the government, too, because it improved my engineering knowledge.

JW: And then you wound up coming back right afterwards and resuming the work that you'd been doing?

JC: After school, Yeah. By that time, we had hired Pat Twohig to maintain the ships gear and so forth. And so we would share trips, usually there would be one of us, and then we had another technician later on who would go to sea. So I think it worked out good for the government, it

worked out good for me. It was a good trade off. So it was quite different I'd have to say that, you know, for an engineering person to get into this discipline of going to sea.

JW: Did they wind up hiring more engineers as well?
JC: Eventually NOAA took over the operations and they had their own technicians.

JW: Because you were the first engineer that was hired.

JC: I was the first engineer that was hired, Yeah. So Pat, I'm trying to think of the year I went back to college, started in '55, did our work for three years, our TV work . . . let's see, the Cuban Missile Crisis was '62 I think, and so this all falls in line there, but it's been a lot of years, of course . . But the fish egg counter, the time/depth recorder different devices, and I would get some help from Woods Hole Oceanographic. You know, in those days, we would work together in engineering oceanographic even though I was at the fisheries.

JW: Collaboration on different projects?

JC: Collaboration, Yeah, and MBL [Marine Biological Lab]. There was a man who was a scientist of the lab, Dr. Galtsoff, Paul Galtsoff, he was the oyster biologist from the early days. Dr. Galtsoff and Dr. Loosanoff came from Russia. They got out of the, during the time of the Bolsheviks which would have been around WWI.

JW: 1917, yup.

JC: 1917.

JW: And they worked down at Milford, right? The Milford Lab.

JC: Dr. Loosanoff, Dr. Victor Loosanoff went to work in Milford, and Dr. Galtsoff worked at the Woods Hole lab and he shared time, I guess, between Marine Biological Lab and the Fisheries. And he was quite a gentleman, Dr. Galtsoff He and his wife, Eugenia, they were Russian, you know, they escaped from Russia. They were academia, I guess, you know?

JW: And he was working on oyster biology?

JC: Yeah! But Loosanoff also worked on oyster. It's interesting that two Russian biologists came to the United States and both worked on, but Dr. Galtsoff wrote the book on the American Oyster. You ever seen that?

JW: No. I'll have to look for it.

JC: Yeah, well it's, I mean they talk about oysters now in Salt Pond and Sitters Pond, all the ponds along there, you know there are 17 coastal ponds in Falmouth. They don't all empty into Vineyard Sound, but many of them do, and so there's Oyster Pond coming back from Woods Hole, Sider's Pond, ahh let's see, Oyster Pond, Sider's Pond, and ahh . . .

JW: I only know the three big ones over there, Green Pond, Bourne's Pond, Gray Pond.

JC: Yeah, that's right, Gray Pond. Yup.

JW: I'm familiar with those though.

JC: But he was quite a gentleman Dr. Galtsoff, he and his wife Eugenia, and of course, I knew them very well, and he would do some work at Marine Biological Lab when they got their first electronic microscope.

JW: What are your recollections of the Woods Hole community from when you arrived here and then wound up buying your house in 1957, was it, right?

JC: Yeah, I bought the house in '57. And it was, well, you know, one of the names that we acquired in Woods Hole from the townspeople were "The Bug Hunters." Slang you know, "The Bug Hunters."

JW: Why was that?

JC: Well, because in those days they, I guess they, it's quite different in the '50s than it is now. Oceanographic is developed, Woods Hole Oceanographic got much bigger. We got our new labs, the new research vessel *Albatross IV*, and the *Bigelow* came along, and the *Bigelow*, I thought was going to be called the *Albatross V*, but that wasn't to be. It was called the *Bigelow*, which Bigelow was a scientist at Woods Hole Oceanographic. Henry Bigelow.

JW: Right. Henry B. Bigelow.

JC: Yeah, so I always thought that eventually there was the *Albatross I*, which was the fishing vessel called the *Harvard*, the original vessel out of Boston. And then.

JW: Well, that was the *Albatross III* right? Or became the *Albatross III* eventually.

JC: Yeah, *Albatross III* – after the Coast Guard added 30 or 40 feet at amidships. I guess they thought they were going to make it a little mini-destroyer, but on the first shakedown cruise they realized, "Ooh, bring this back to the dock." But they used it for a fishing trawler for years. It would lay over because Wigley wrote a story, he may or may not tell you about, that one cruise they were in trouble.

JW: I'll have to ask.

JC: And he wrote an article for the local paper, *The Enterprise* later on about that trip. And I was on the radio that morning they called in and said "we're in the storm. We're getting high winds, we're laying over, it's scary." So me being ashore taking the call, you know, it's quite a difference when you're taking the call at sea and when you're at sea.

I remember my early days at sea on the *Albatross III*. Some of those trips, you know, we laid her out pretty good. At first my early days going to sea, I'd sometimes take my life preserver and have it handy just in case. But then one day, I realized it's not going to make any difference so forget the life preserver. [chuckles]

JW: Well, you said, too, that Jack Clark sent you on a cruise within several days of your arrival in Woods Hole, right?

JC: Yeah. I was in the Navy as I said, of course, so I had my sea legs you know, I was pretty familiar with going to sea in storms, but different type of vessels, but we got used to the *Albatross III*, which as I told you earlier, when it was a fishing vessel, the *Harvard*. Wigley might relay that to you or he may not. But of all the groups from the Woods Hole Lab, the Fisheries lab, Dr. Wigley, myself and Fred Nichy are the only three in this area that are alive today.

JW: Who were in your cohort?

JC: Yeah. Fred Nichy was a biologist. He came from Miami, from college in Miami, and he became in the end the curator at the aquarium after a man named Charlie Wheeler retired. He was one of the early biologists that were hired during the Saltonstall - Kennedy fund. Kennedy was early congressman from Boston, as you know, and Saltonstall, Leverett Saltenstall was a Senator from Boston, of the Brahmins, the early . . .

JW: The old patrician senator.

JC: Yeah, yup. And so they, Saltonstall-Kennedy Permanent Fisheries Fund, I believe, I don't know if it's still in effect or not? Have you ever heard of it?

JW: There's a grant now, but in terms of other permanent funds, I'm not sure.

JC: Yeah. My memory of it was, and I remember coming back in the early days before we got money for the TV project in '55, coming back from Washington and I think John F. Kennedy was a Congressman, and my Aunt Annie who came from Charlestown worked, they were like the early mothers, she was a Gold Star Mother, her husband was killed in WWII in Europe and Jimmy Curren, and he and Annie, my Aunt Annie, who was the sister of my mother, she came from Charlestown and she worked in the ground roots of Kennedy's first, when he first got into politics running for Congress, John F. Kennedy.

JW: Oh. She worked on his campaign?

JC: She worked on his campaign, Yeah. And as they say, she was a Gold Star Mother. They had one son, Jimmy Curren, who later became some kind of a monk, a monastery monk. But Annie was quite a gal, I remember…I was relating to you the one trip when I was going to Washington to Interior to ensure the funding for this camera, at the same time Alan Vine, from the Woods Hole Oceanographic who had the idea of the Alvin, you've heard of the Alvin? I think there's still an Alvin isn't there?

JW: I think it's still around somewhere, Yeah.

JC: Well, it went down three miles.

JW: That's what Ballard used to find the Titanic, wasn't it?

JC: Well, yeah.

JW: Or one of the many tools.

JC: I think the French locate the Titanic, but then Ballard went out and dove on it. Yeah, with the Alvin. Now Al Vine, which is how the name Alvin came, we knew each other. Because he was Woods Hole Oceanographic and I was Fisheries. He went down to the Office of Naval Research to get his funding for his idea of a submersible which would go three miles deep in the Pacific, and on this particular trip, going back to Boston on a Friday evening for the weekend, he being the Office of Naval Research, trying to get money for his idea, I was at the Interior and you know on the funding for the TV Camera, we're in line as usual in Washington National Airport hoping to get on the flight to Boston for the weekend, and along came John F. Kennedy, Congressman Kennedy, and he had, of course, a reserved seat, and he came by and he would wave to us "Hi Guys!" He knew we were from Boston, from Woods Hole area, and he'd get on board and so I remember that trip, I got chatting with Al Vine, and we went on board and I stopped at Kennedy's seat and said "Hello," and introduced myself, told him I was working in Woods Hole under the Saltonstall –Kennedy money fund, permanent fund, which he was interested in, of course. And I told him I think you know my Aunt, Annie Curran, I think he really knew her because of grassroots, his first political days, because they would have people into their house for tea, you know, to get the vote out, so that was my first time I met John F. Kennedy, and when I mentioned the Saltonstall-Kennedy fund, he said "well, that's pretty good." He was going back to Boston, too, to go to Hyannis Port, I guess, for the weekend. It happened to be on that particular trip, Al Vine and I sat together on the airplane so we chatted about his ideas and my ideas. His being . . .

JW: A meeting of the minds.

JC: A meeting of the minds…his being Alvin, which became a big deal, and mine was, I'm working on getting a TV camera so we can take pictures of the fisheries trawl. So it's kind of interesting.

JW: Well, that's something.

JC: So it's kind of interesting.

JW: Well, are there any other parting thoughts or perspectives on the sort of, evolution of the Center, or on your own career that you'd like to . . .

JC: Well, you know, I never envisioned the fisheries lab moving, but you read in the local papers here that the possibility of the labs might be moving. Who knows? I haven't heard any more about it, but . . .

JW: Neither have I.

JC: But the fisheries was a fixture in Woods Hole. You know I remember talking about Al Vine and some of the other scientists about how when the Woods Hole Oceanographic started, I think that started probably in the '30s.

JW: Yeah, I'm not sure when we came into being. I should know.

JC: I think their first vessel was a sailing vessel, called the *Atlantis*, and the gentleman who had that vessel on the island, Martha's Vineyard, came over here to Woods Hole and of course, that's I guess, Woods Hole Oceanographic started, I think, maybe in the '30s.

JW: Could have been.

JC: I think the '30s. And of course, the MBL was a long time, much like the fisheries lab. I mean fisheries lab, the scientists came down from Boston at Harvard, and many of them would go over, and they co-worked with the Marine Biological Labs. Which, that was built about the same time the first fisheries lab was built.

JW: Maybe. Yeah, the fisheries labs I know were built in the days of the U.S. Fish Commission which would have been in the 1870s, I think.

JC: Yeah, 1870s. When the emissary comes up from Washington to look for a place, it might be a good mix for a fisheries laboratory, and it's worked out pretty good. And I'm not sure the sequence there, but the Marine Biological Laboratories, those buildings that are still standing down there, they go way back. I don't know which came first, the old fishery lab or the MBL. I'd be interested.

JW: I'll have to look into that.Yeah. Well, let me get a photo of you before concluding the interview, and thank you very much for sharing your memories.

JC: Well, it was a pleasure. After I've been retired now for quite a few years, and as I say, the only remaining people from the Labs are Dr. Wigley who you will see, Roland Wigley, and when you first called me, I thought at first you were Roland. I thought you were, we called him Wig. Your name is Wrigley.

JW: Right. I got the R in there.

JC: And Joshua