

ORAL HISTORY 2 TRANSCRIPT

M. SCOTT CARPENTER
INTERVIEWED BY ROY NEAL
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NEAL: You're speeding? All right. But first of all let's place this. We're in Vail, Colorado, at the home of Malcolm Scott Carpenter, to give it due formality. Thank you for having us here.

CARPENTER: Hate that first name.

NEAL: The date is January the 27th in the year of 1999, and we are ready to roll. Are you ready to go, Scott?

CARPENTER: Let's go, Roy.

NEAL: All right. Let's do. You know, you were born here in Colorado. Anything in that background that leant to your becoming an astronaut?

CARPENTER: Not that I can think of, except they're both high country orbit and Colorado mountains.

NEAL: Well, from there you went down to low country, meaning the Navy. Right down at sea level. Why Navy?

CARPENTER: Well, I was a naval aviator. But how in the world I got an affection for the deep blue ocean, having grown up in the high country of Colorado, I don't know. I've pondered that question a lot and can't answer it for you.

NEAL: There is an evolution there, none the less, though. Because I see in your background: test pilot school, intelligence schools, all of these that led up to your being selected as an astronaut. Can you describe that training and how you think it might have played off into that eventual choice?

CARPENTER: Curiosity is a thread that goes through all of my activity. I've been curious. I've also been frightened by the deep ocean. I wanted, number one, to learn about it; but, number two, I wanted to get rid of what I felt was an unreasoned fear of the deep water. I was also inspired by what [Jacques] Cousteau had done. I saw a use for NASA technology in ocean technology, and first proposed to Cousteau that I come and share technology with his program. He said, "Well, we could use your experience, but you don't speak the right language and we can't pay you very much. But," he said, "if you want to share technology with the ocean, do it with your own United States Navy." And that's how it happened.

NEAL: Well that's, of course, what happened *after* you had been an astronaut. So let's come back to that, if we may, Scott. And right now, let's go back to the origins and relate, if we can, that naval background and the deep sea—the ocean, if you will—into the oceans of space.

CARPENTER: Okay. I can do that by recounting one episode that revealed to me an unreasoned fear of the ocean. I flew big airplanes with a large crew out of Hawaii early in my Navy career. We were doing a survival exercise in which we had to manage ourselves in

two life rafts on deep, dark, blue water. We lost overboard from the raft I was in a corner reflector, which is the most important piece of equipment you've got on a raft in a real survival situation. It is the thing the radar will pick up and guide rescue [in] your direction. It went overboard, and I thought of trying to get it. But I was afraid of the sharks and the critters in that water, and I didn't do it. But my gunner's mate, without a second thought, jumped overboard, was gone for a long time, but he swam down and got that corner reflector and brought it back up. And I thought, "There is a brave man," and it made me ashamed of myself. That was the genesis of my need to conquer my fear of the deep ocean. It's an important thing. Conquering of fear is one of life's greatest pleasures, and it can be done a lot of different places.

NEAL: And so you made application for that other ocean, space; and eventually you were named to the Space Task Group. It must've been quite a thrill to be named to that elite group. Or was it?

CARPENTER: Sure. The greatest thrill of my life. Getting to be a part of the crew that would do this unheard of thing, and a thing that would banish so many unknowns. It's food for curiosity.

NEAL: Well, you were with a rather distinguished group. Could we take them one-by-one and kind of look at them through your eyes? Let's say, just for the sake of discussion, John [H.] Glenn [Jr.].

CARPENTER: He and I bonded immediately. Who can describe the reasons for bonding? I just have a great deal of respect for him. We had a lot of interests in common. There were three Air Force fellows in the group. We used to kid each other about not caring much for

one another, but we all recognized that we were on the same side. This isn't Cold War time. They were, all of them, highly qualified professionals, and I have the highest respect for every one of them. I was just more bonded with John than any of the others because of common interests.

NEAL: How about Gus [Virgil I.] Grissom?

CARPENTER: A true professional. Didn't have a lot to say, but when he said something it was always worth listening to.

NEAL: Wally [Walter M.] Schirra [Jr.]?

CARPENTER: The joker. He doesn't like to be called "the joker," but he is a great high-jinks fellow, you know? And he added a lot of levity to everything we did, and that was very valuable.

NEAL: How about Deke [Donald K.] Slayton?

CARPENTER: Deke [was] probably the most dedicated, single-minded professional test pilot of the group. He was more dedicated to airplanes in general and how they work, I think, than any other fellow in the group.

NEAL: Alan [B.] Shepard [Jr.]?

CARPENTER: Born leader. Came to the program with a lot of experience and a lot of talent. And it showed up in his choice as the first spaceman in this country.

NEAL: How about Scott Carpenter? How would you see him fitting into that group?

CARPENTER: I leave that to others.

NEAL: Very good. You had early assignments in Mercury. Do you remember what they were?

CARPENTER: Communications and navigation, and that's as a result of my experience at Patuxent [River, Maryland, Naval Air Station], the Naval Air Test Center, with equipment and techniques that had to do with Earth observation and photography and communications.

NEAL: Did those specialties pay off for you a little later in the program? Communication? Navigation?

CARPENTER: Well, those sciences, if you will, were the ones that I was directed to follow. So I had a background that was helpful in the tasks that were assigned to me by NASA.

NEAL: Well, what were some of your early assignments in Mercury?

CARPENTER: Making sure that the communications equipment worked well and the navigation techniques were adequate to the task. These were just the small tasks that I was given to monitor solo, and each of us had certain tasks for which they were responsible. We all had a lot of tasks to do together.

NEAL: Not the least of which was the assignment of being Capcoms round the world during those early Mercury flights, when it was astronauts could only talk to astronauts. Where were you, for example, during John's [pause]. Well, let's start at the beginning with Alan Shepard and then with John Glenn and Gus Grissom, where were you?

CARPENTER: For Alan's flight, Wally Schirra and I, in keeping with an old Air Force—Edwards, as a matter of fact—practice of chasing every experimental flight with airplanes. Walt [Walter C.] Williams from Edwards [Air Force Base, California], highly placed in the Administration in those days, thought we should chase Al Shepard's flight just because it was always done. So Wally Schirra and I were given some Air Force airplanes (F-102s) to chase Al's flight. We orbited and we couldn't stay close to the pad, because there were a lot of unknowns and dangers in those days that we didn't quite know how to cope with. But Wally and I were circling the pad, listening to the count, but at some distance, maybe 3 miles away. And Al took off, going straight up, and Wally and I never saw a thing! You can't chase a Redstone going straight up in a 102, so all we did is fly circles. And we came down and sort of said to each other, "What happened?"

NEAL: It's pretty well known, by now, but let's go back over the background of where you were for John Glenn's flight and what you did. It kind of made a little history.

CARPENTER: Yeah, well I was John's backup; and part of that job was to be in the blockhouse during the count, and that's where I was. And I was taking care of all of the communications from the launch people and the launch complex to John. And I was, so I was told, the only one who would be able to communicate with John in that period from T-minus 18 seconds to liftoff. That's when it occurred to me that this fellow named John Glenn, in order to have a successful flight, was going to have to put under his belt more

speed than we had ever given a human before. Speed was the essence. If he could get the speed and if it were in the right direction, he had orbital flight licked. You know, “Godspeed” is something you hear all the time; but speed was very, very important to John. And it just came to me, “Godspeed, John Glenn;” and I think the fact that his name is two short syllables made it ring a little better. But anyway, somewhere in the count between 10 and zero I said, “Godspeed, John Glenn.” And it was a salute to him, but there was a feeling, I think, in me at the time that it could be viewed as a plea to whatever Higher Power to, you know, make this flight a success. And I would suggest that nobody can tell me that that plea didn’t work, because the flight did.

NEAL: It worked not once but twice, because NASA made special arrangements for you when John flew the second time [on STS-95]. Can you tell us about that?

CARPENTER: Yes. Well, yeah, but I will also tell you that both of these pleas, “Godspeed, John Glenn,” he didn’t hear—and I just recently learned this—until *after* the launch. I thought he heard them both when I said them, but that wasn’t the way it happened. I couldn’t say the same thing on the Shuttle flight because it’s not a solo flight. So I thought it appropriate to add, “Good luck to the commander and crew of the Shuttle and, once again, Godspeed, John Glenn.” That statement has had endurance that surprises me.

NEAL: Perhaps with good reason. Well, let’s go back now to your flight. How did you get to fly MA [Mercury Atlas]-7, *Aurora* [7], instead of Wally Schirra?

CARPENTER: No, no.

NEAL: How did you get into that flight?

CARPENTER: It was Deke, first of all.

NEAL: Oh, Deke first. That's right.

CARPENTER: Deke was assigned to that flight.

NEAL: Let's go through that sequence, shall we?

CARPENTER: Yeah, okay.

NEAL: How did you get to fly MA-7? Let's rephrase the question.

CARPENTER: Well, okay. The flight after John's, which was MA-6, was MA-7; and Deke Slayton was assigned that flight. On the centrifuge during the training period for that flight Deke had an anomaly in his heart which in conventional medical wisdom of that time was considered disqualifying. We recognize now that it was no more serious than a hiccup, but Deke was scratched and he wouldn't fly again for a long time, until Apollo-Soyuz [Test Project]. It was a destructive thing for Deke. Wally was his backup and by rights should have gotten the flight. But Walt Williams again, I think (I don't know who made the decision), but it was a NASA decision that since I had had such an intimate relationship with the MA-6, getting John ready to go, that I was better prepared to take the next flight than Wally was, the standby. That was very destructive to Wally, too, and we've survived that; but he was angry, and with reason. Anyway, I got the flight. And Wally became not only backup as he had been for Deke, but my backup; and he got the flight following.

NEAL: And you called the flight, or called the spacecraft, *Aurora*. What's in a name? Where'd you get a name like that?

CARPENTER: Well, there's some popular disagreement about that. I named it *Aurora* because I saw it as a celestial event, and the *Aurora borealis* is a celestial event. I liked the sound of it and the celestial significance. First of all, let's go into 7. Al Shepard started that with *Freedom 7*, and the Press caught that and said, "Isn't that nice of Al to name his capsule *Something 7* in honor of the seven astronauts, his buddies?" And everybody believed that. The fact of that matter is that he named it "7" because it was capsule number 7 off the line. But the people didn't know that! But since everybody wanted to match Al's largesse, Gus had *Liberty Bell 7* and John had *Friendship 7*, so I had to do something with "7," and it was *Aurora 7*. But the people back home in Boulder, down on the front range, thought, "Wasn't that nice of Scott to name his capsule *Aurora 7* for the fact that he was born and raised in a house in Boulder on the corner of Aurora and Seven Street?" So I give you the real reason behind *Aurora*, but people from Boulder don't believe it.

NEAL: Did you run into any problems in flight? Or was it a nominal flight up till the bitter end?

CARPENTER: Oh boy, sure! There were problems in all of those flights. I had one that's most famous for overshooting by 250 miles. I had the record for overshooting the target for a long time until some cosmonauts came along some years later and missed theirs by 1500 miles. But there was an overshoot that caused a lot of dismay in the Control Center, and it was, if you talk to Chris [Christopher C.] Kraft about that, failure of the man. If you talk to me about it, it's a failure of the machine. Where the truth is, I don't know. But [interrupted].

NEAL: You'll never have a better opportunity to express your point of view than right now, Scott. Why don't you grab it and run with it? [telephone rings] Right after that phone call.

CARPENTER: Oh yeah, okay.

NEAL: Okay. [telephone rings]

CARPENTER: It's probably [interrupted].

NEAL: We'll hold

CARPENTER: The machine upstairs will get it in one more ring, I think.

NEAL: Yeah. This should— The other machine just picked it up. Okay. Are we still rolling?

VOICE OFF CAMERA: We're still rolling.

[Break]

NEAL: All right. We're at a good spot.

VOICE OFF CAMERA: Get it all down, okay? And go ahead and go again.

CARPENTER: Am I still slouching?

NEAL: Oh no, you're sitting up just fine. We're ready to pick it up again, and we had just reached that point where you said "Chris Kraft and some of his controllers were not happy" and I had said "Scott, you'll never have a better time than right now to tell your side of that story."

CARPENTER: Yeah, well, part of that difficulty came from mismanagement of my fuel system, which caused a great concern on the ground because I was ahead of my fuel consumption line. That was not good, and I didn't like that any better than anybody else. However, there were other failures that exacerbated the effect of low fuel; and when you get right down to the other problem with the flight, which directly caused the overshoot, there were three failures that were all additive.

First of all, the retrorockets were slightly under thrust. That may be a minimal influence on the overshoot. They were late because of an attitude instrument failure which really had not been discovered. I didn't—there was no yaw check in the flight plan. Maybe there should've been, but we didn't expect that; and, remember, we're learning. Anyway, the yaw indicator was bad. I think all the attitude instruments were faulty, but intermittently. So when it came time for retrofire, I had to cage those gyros and fly manually, out the window, attitudes that I thought were right. Pitch is no problem. You can see that easily on the horizon. Roll doesn't enter into it. But yaw is very difficult to see without spending a lot of time tracking your progress, and I didn't do that.

I probably would have done that had I not been so fascinated by the discovery that John Glenn's were not fireflies but pieces of frost. That fascinated me. A major discovery, I thought. In any event, all of these things added to an overshoot. The retrorockets were not pointed in the right direction because I was not pointed in the right direction. I attribute that to instrument failure, and there is some disagreement about that.

NEAL: Let me go back over one element of that, that you mentioned; that is, the fireflies from John's flight, because we should explain more precisely what you mean. John saw something out the window. Would you explain that?

CARPENTER: Yeah. It's hard to realize that we didn't know for sure at that time whether or not there were living critters out there at 150 miles' altitude because John said, "There are fireflies." He called them that, and we really didn't know whether something like that existed. That's a good indicator of the state of our ignorance in many things at that time in the space program. It turned out—as I was stowing equipment, banging the hatch on the side of the capsule just before retrofire—the "fireflies" started flying past the window; and I could make more fly by, by banging the hatch. And it was little pieces of frost in the—illuminated by the Sun, behind me at this time at sunrise; and they were just little ice crystals; and I figured, "Hooray! We know the answer to that question." It was a moving time for me.

NEAL: In retrospect, what do you think now as you think back on zero g and spaceflight in general as you experienced it?

CARPENTER: You have to realize that my experience with zero g, although transcending and more fun than I can tell you about, was in the light of current spaceflight accomplishments very brief. But it's the nicest thing that ever happened to me, and I can't believe that I wouldn't enjoy it just as much for a more prolonged period. The zero-g sensation and the visual sensation of spaceflight are transcending experiences, and I wish everybody could have them.

NEAL: You could certainly understand why John wanted to go back up there for the longer flight, can't you? Would you have taken the same opportunity?

CARPENTER: Oh sure. But it was not offered me. That is the fact of the matter. I, as a matter of fact, am questioned frequently about this: Would you do it? And one of the answers is tongue in cheek but it is also partly true: I'm not old enough.

NEAL: You had plenty of time after landing, when you were down in the ocean. You had plenty of time to think about the mission. And I wonder, what were your thoughts during that period of time when you were waiting to be picked up after your flight?

CARPENTER: I had uninterrupted time. When I say "uninterrupted time," most everybody else who'd gotten back was subjected immediately to pressing questions and a large debriefing team; and they don't have much time, as much as I did, for introspection and reflection on the events of the past 5 hours. I treasured that. The only living critter I had around for a long time was a gold-colored fish that had taken up residence under my life raft in the shade of the life raft. And I remember contemplating the marvelous experience and enjoying time to reflect on it.

NEAL: You know, in space, as you've just described it, you were quite concerned with the effects of *being there* and figuring out what was really going on. Do you think you were really effective at that time in explaining those effects? And of course in more recent years, I'm looking at the fact that, as the spaceflight continued, television became an aide and people now can share the flights, *ad nauseum* almost. But back then, it was all in your hands. We couldn't see; we couldn't hear. You were our eyes and ears. Do you think you were effective in explaining what was going on in space around you?

CARPENTER: All I can tell you is that I hope so, but that's another question that must be asked others. I tried to do that; but it is difficult, I think, to describe all of the sensations of spaceflight. It was a new concept then. Never before done. People understand it better now because they've lived with it all these years. But not then.

NEAL: You were also the first to propose a neutral buoyancy tank. I can certainly understand that in view of your Navy background; using water to simulate, if you will, zero g. When first you came up with that suggestion, how did NASA receive that idea at first?

CARPENTER: Well, I don't think there was any objection. The idea bore fruit in many, many different ways. It required the expenditure of a lot of money to build a neutral buoyancy simulator, but it has paid off *handsomely* in training people for EVA [extravehicular activity] and it's, you know, irreplaceable.

NEAL: And thoroughly one of the tools of NASA today. Have you had a chance to operate within that neutral buoyancy tank at all in recent years?

CARPENTER: No. I was at the tank in Houston, but I didn't get in the water. But I've had experience doing that in the open ocean with *Sealab*.

NEAL: I think that kind of brings us right back to where we started some time back. You had described, if you will, your acquaintance and the working relationship with Cousteau. So right now you moved out of the realm of astronaut. Let's move the transition, first of all, what you did after your flight. It became fairly common knowledge, and I think you were privy to the fact, that you probably would not fly again. Is that right?

CARPENTER: Well, you know, not at the time of my choice. I got really fascinated with this idea that I discussed with Cousteau and then with George Bond of transferring technology to the ocean. And I did that, or I tried to do that, with *Sealab 1*; and then I broke my arm and couldn't make that dive, but went back to polish that idea off in *Sealab 2*. And that was another transcending experience for me.

NEAL: Well, you had several considerations before you left NASA, didn't you? You had other jobs in the interim there before you left NASA?

CARPENTER: Oh yeah, sure, and part of it was in the development of that neutral buoyancy simulator. But I really, by that time, became enamored of the people and the idea involved in living underwater. And that was my new love.

NEAL: And do you see a relationship between the things that you discovered underwater and the things that you discovered in the ocean of space?

CARPENTER: There are many, many similarities in the training and in the environment [of], quote, "isolation and confinement." And the people—the people are similar, although Navy and civilian deep-sea divers are not as highly educated by and large as the heroic spacemen are, they are the greatest bunch of unsung heroes I've ever known. And the other thing that gives me an affection for the whole idea, and the people and the science, is the fact that these Navy and civilian divers put their lives on the line for the benefit of new science and for, at that time, national security just as surely as the heroic spacemen do; but nobody cares a whit about these divers. Nobody even notices what they do.

NEAL: Well, perhaps the Navy should do oral histories as NASA's doing with spaceflight. Since we are dealing with spaceflight, though, let's deal with other astronauts after the Mercury Seven group. Did you have a working relationship with the crews that came after that? And, if so, [telephone rings] once the telephone stops ringing, we'll pick up again.

CARPENTER: Is it ringing again?

NEAL: It just rang. I think you have to wait until your answering machine kicks in.

VOICE OFF CAMERA: No, it wasn't [interrupted].

NEAL: Was that somebody's cell phone?

VOICE OFF CAMERA: That's what it sounds like.

NEAL: It sounded like it. It's off. All right. Are we clear to go ahead? Are we rolling? We're at speed? All right, I was asking let's get back on a space track, because this is primarily obviously for NASA at Johnson Space Center, oral histories there. And I was asking if you had met—working acquaintance with any of the other astronauts after the Mercury Seven.

CARPENTER: Sure; and they're a highly respectable group, all of them. I was—you know, I really feel privileged to know these fellows as well as I did. I had a particular affection for Ed [Edward H.] White [II], and I *hated* to see what happened. He was the prince of the new guys. Dave [David R.] Scott was a favorite of mine. But they're all highly accomplished, dedicated fellows that I was honored to know.

NEAL: Let's take a look at some of the other people of that era and ask for your recollections. Pad leader Guenter Wendt. What do you remember?

CARPENTER: Yeah, Guenter Wendt. He's a great, great fellow. He was probably more closely associated with every flight than any other fellow on the ground—except for Joe [Joseph W.] Schmitt, who was the suit man. Two dedicated, fine fellows that I remember with great fondness.

NEAL: When you got buttoned in, those were the fellows that used to see you as they buttoned you in, weren't they? The last human beings. How about others like, oh, [Manned Spacecraft] Center Director Bob [Robert R.] Gilruth?

CARPENTER: Yeah, he was, in his own words, he was "the maestro." I don't know that he used "maestro," but he did say that his job at NASA was like conducting an orchestra; and that's what he did. He was a bright, dedicated man for whom I also have great respect.

NEAL: Speaking of conducting an orchestra, there was [NASA Administrator] Jim [James E.] Webb.

CARPENTER: Yeah. Instrumental in the early days, he was very effective at his position in Washington.

NEAL: As the Administrator. [doorbell rings] There's somebody at the door.

CARPENTER: That is probably David [interrupted].

[Break]

VOICE OFF CAMERA: Recording.

NEAL: We're asking for your recollections of people, and we had just gotten to Jim Webb, the Administrator of NASA during that key period in time. What do you remember?

CARPENTER: I remember a *very* effective representative for NASA in Washington. He did everything required, and then some.

NEAL: And how about Chris Kraft?

CARPENTER: Chris was effective as Mission Director, and he was Control Center boss for a long time. And he was dedicated and served NASA for a long time in the Control Center; and he even became Director of Manned Spacecraft Center for a while, I think, later.

NEAL: Another of the guiding lights at that time was Chuck [Charles W.] Mathews. Do you remember Chuck?

CARPENTER: Not as well as Chris [interrupted].

NEAL: He moved into the Gemini Program.

CARPENTER: And some of these other fellows you've mentioned.

NEAL: He was aboard at the time of Mercury, but basically he became Mr. Gemini. All right. Let's move on. What are some of your favorite anecdotes? Things that you might remember during the years that you spent in the space program? Strangest, funniest, that kind of thing.

CARPENTER: They're all unmentionable.

NEAL: Every one? There must be one that you can dredge out of your memory that can be retold.

CARPENTER: No, not seriously. Well, there was one episode when John and I were racing in his convertible for Friendship Airport. We were late for the airplane going, I think, to St. Louis; and we were going just barely to have time to race through the airport and catch an airplane. And I was getting the tickets out, ready to turn them in, and it occurred to me that I could surprise John a little bit by making him think that the tickets flew out of the car in the slipstream. So I let the envelopes go by. He was driving furiously down the road, trying to make the airplane; and I told him, "The tickets had just blown away." On that freeway, there's no way to turn around, so we had lost the airplane. And he took it very well. He laughed about it, and [said] we'd take another airplane. But then I told him, "It was just the envelopes that I lost" and that we could proceed to the airport, and he continued to laugh. But I remember that his laugh had a different note when he knew we were still able to make the airplane. We were always playing jokes on each other. They would go—I could go on forever with that.

NEAL: Well, we don't have forever, but if you'd like to try one more we'd be delighted to hear it.

CARPENTER: Wally and I were driving from Oceania back to Langley [Research Center, Hampton, Virginia] in his little MG, I think it was. The top was down, and I think the top wouldn't work. And we encountered a thunderstorm, and we got so much water inside that car that if you opened the doors the water would run out. And Al Shepard passed us going home and saw us water-soaked in this car, and somehow or other a cartoon was drawn of that episode. I think Wally has it. Two bedraggled passengers—driver and passenger—in a car *filled* with water. It's a good cartoon. We should—I should ask Wally about that.

NEAL: A lot of these anecdotes showed up in Tom Wolfe's book called *The Right Stuff*. You were in that book. You played a prominent role. And in the movie that followed. There's been a lot of discussion about it, pro and con. I wondered, what are your impressions of *The Right Stuff*, the book and the movie?

CARPENTER: Well, I think the book is good and I think the movie is good. My affection for both is colored some by my great affection for Tom. He is a bright, bright, fine man; and I think the film is a great film. I'm asked about it frequently, and people say, "Does it tell the truth?" And I say what I believe: that the book and the movie, for that matter, are truthful. They made—they take—both of them take some literary license with facts, but only nonessential facts. The important details portrayed by both the book and the film are presented accurately.

NEAL: Finally came that day after your Mercury flight when you were involved with moving astronaut training and your residence in Florida to Houston. Now what were your feelings about the decision to locate MSC [Manned Spacecraft Center] near Houston, first of all?

CARPENTER: I really didn't feel strongly about that decision. It was an exciting move. Houston seemed like a good place to be, better than Newport News [Virginia]. And, you know, since the decision was made without any input from me, I went along with it, happily, just like I think everybody else did.

NEAL: What was it like, once you'd made the move? What was it like living in the Clear Lake community? Now, that's both from the personal and a professional point of view.

CARPENTER: Yeah well, it turned out to be a very good decision. The Houston community was—they welcomed us with open arms. We developed a great affection for the country and for the people. I didn't care for the flat land too much. I didn't care for the temperature and the humidity. I remember making fun of that territory when I would take my family—bring them here to Vale, as a matter of fact—to ski in those days. It was a 2-day car trip. One and three-quarters of those days was all in Texas. It's all flat land. It gets boring, but that's okay. Houston is a long, long way away from everywhere else; but it's got—it's a fascinating place that I still like.

NEAL: And, of course, the story of the Manned Spacecraft Center goes without saying. It's had a tremendous history, and probably has a tremendous future, wouldn't you think?

CARPENTER: That is up to the people of this country. We need, I think, a goal other than the International Space Station. We need to get cracking on a manned flight to Mars, because that is going to capture the interest and the support and the imagination of the people of this country who pay for spaceflight. Without that, Houston can dissolve. We need to go to Mars.

NEAL: You don't think the International Space Station is a good interim step?

CARPENTER: I think it is, but I think it is only interim. We need something bigger and better.

NEAL: Well, let's qualify that. How do you really see the International Space Station right now?

CARPENTER: As a valuable, current pursuit; but it needs to be followed by things that demonstrate more vision.

NEAL: Is the technology ready to tackle Mars as a goal?

CARPENTER: Yes, sir.

NEAL: Why do you say that?

CARPENTER: Because it's a fact. We know how to do that. We just don't know how to get the money. We don't know how to get the *support* that will provide the money. The technical problems, if we haven't solved them already, they're easily solved in the near future.

NEAL: Well, I think that answers my last question, which is where you'd like to see the nation go in space. Unless there's something else beyond that, that I'm not seeing.

CARPENTER: Oh sure. Mars is interim. But for now, that's a goal that NASA and the country and the planet can live with enthusiastically.

NEAL: Well you know, Scott, we covered just about all the basic questions that I had. But it occurs to me that I ought to give you the chance to say anything that you really want to say. Is there anything that you'd like to bring into this discussion, realizing that you're writing oral history for the historians and for Public Affairs both. Realizing that, is there anything that you'd like to bring in this discussion that I haven't given you the chance to talk about?

CARPENTER: Only that I feel I have been a very, very, fortunate man to have lived at the time when so many unknowns can be made knowns; and that's happened in this century. And that pleases me probably more than anything else, because I think it is fair to say that I have been (and remain) a very curious person. And I've had a lot of satisfied curiosity in my time.

NEAL: You've had the chance, really, to live out your curiosity, haven't you? To find out at least a few of the answers you were looking for.

CARPENTER: Yep. And satisfying curiosity ranks number two in my book behind conquering of fear.

NEAL: Would you recommend the profession of astronauts to young people?

CARPENTER: Oh, of course. But so would I recommend learning to be a concert pianist. There are thousands of challenges, and it's got to be to each his own. Every—*every* child has got to seek his own destiny. All I can say is that I have had a great time seeking my own.

NEAL: Debbie, I've finished with my list of questions. Do you have anything you think we should add to this? Have we covered the bases from your point of view?

VOICE OFF CAMERA: Very, very thorough. I don't know if you've really mentioned anything, though, about the future of NASA, you know, and all the underwater—

NEAL: The underwater things? Well, let's give that a shot, shall we? You're talking now NASA's future under water or the Navy's? Which? Are we talking Navy—? Well, let's just cover the broad field of where the country may be going undersea. That's a much broader question; it allows you the leeway to maneuver any direction that you see fit.

CARPENTER: During *Sealab 2* when we, for the first time, put men in residence on the ocean floor at 200 ft (never been done before), it was a great technical triumph; a physiologic triumph as well. And in the film that the Navy made, the documentary of that episode, it was stated, "Who knows, perhaps in a few years we will be living and working at 20,000 ft." We thought that would be possible at that time. It turns out now that physiologically, and maybe technologically, [it] is no longer possible. We have come to a brick wall at around 2,000 ft for putting men down and allowing them to stay and work and swim there at ambient pressure. There is a physiologic limit—and it's called High-Pressure Nervous Syndrome (HPNS)—that makes men at that high pressure unable to do meaningful work. So it is *not* any longer an open-end project. I think for that reason that until we conquer that limit, the nation is not going to have much interesting work to do in the *very* deep ocean. I don't see it as a place where people will live. Maybe work. There may be industrial communities of some sort at that pressure in the deep ocean, but I think not residential communities. We're

sort of confined to the surface of the land and the ocean for a long time, except the surface of other worlds.

NEAL: So you then see actually a double-headed program with basic emphasis, perhaps, on space and secondary emphasis on the sea as the future?

CARPENTER: Yeah, I hope that the ocean hangs in there because it harbors a lot of wealth and information and riches that we need to pay attention to. And we are not doing that with the vigor that I would like to see. It will happen, but you have to realize it is just not the glorious endeavor that spaceflight is. It never will be.

NEAL: All right, Debbie. I'm happy with what we have.

VOICE OFF CAMERA: I've got one more.

NEAL: Go right ahead.

VOICE OFF CAMERA: I'm just curious.

NEAL: No, that's all right. Don't be sorry. For heaven's sake. We're asking for anything you want to add.

VOICE OFF CAMERA: In fact, I'm not sure if it's going to pick up on audio, but—

NEAL: I'll repeat your question.

VOICE OFF CAMERA: Something I picked up on when you were talking about the Mars as just an interim step. You didn't really go into a lot of detail of where you thought we were headed after Mars, some of your ideas of where you thought we should be headed.

NEAL: All right. She's going to pin you down. I was not going to, but I will now. You say Mars might just be an interim step. Take us from there, Scotty. Beam us up.

CARPENTER: Okay. Sure. Again, I'm inspired by my curiosity. I want to know what Mars feels like, looks like, what riches are there, what we can do there. And although flight there is an interim measure, in the long range there is a lot to be done on Mars. And I firmly believe that we will, I hope, within two decades (but I'd like to see it even sooner), have not only a manned flight to Mars but the development of an outpost on Mars and then a colony. And I expect that the people who talk about terraforming Mars, this will take generations. But it is within our technical know-how to make Mars habitable to un-space-suited humans. We can have permanent residents on Mars composed of Earthlings. And once we learn how to do that, we can go other places in the solar system. That's within the reach of our current technology. To get outside the solar system [will] take some development that's very hazy at this very moment, but it is going to be possible.

NEAL: You do see some things within our solar system, such as a few moons on some of the far out planets?

CARPENTER: Of course.

NEAL: Let's talk about that. The goals beyond Mars: where would you go?

CARPENTER: To the moons of Jupiter maybe. But first, I think, is Mars. Then and when we learn how to do that, then we will know more about how we can go elsewhere, and where elsewhere might be.

NEAL: Now, Debbie.

VOICE OFF CAMERA: Excellent.

NEAL: I think that covers—you noticed, he dodged your question.

[End of Interview]