PROFILES OF SWE PIONEERS

ORAL HISTORY PROJECT

Carolyn Phillips Interview

June 5, 2003

Detroit, Michigan

Reuther Library Oral History ID: LOH001952.29

Carolyn Phillips

Carolyn Phillips graduated from Pratt Institute with a mechanical engineering degree in 1960. Her first position was with the U.S. Atomic Energy Commission, working for two years as a reactor engineer on the safety systems for nuclear auxiliary power. In 1962, Phillips became the only woman engineer in the Division of Industrial Hygiene of the New York State Department of Labor, during which time she also earned a master's degree in civil engineering from New York University. She was a student and assistant research scientist at NYU's Institute for Environmental Medicine and School of Engineering in the 1970s. In 1974 she began a 25-year career at Shell Oil Company as an industrial hygienist, including 15 years in management. After retiring in 1999, Phillips worked as a health and safety consultant providing litigation support for both Shell and the Chemical Manufacturing Association. A Fellow of the Society of Women Engineers, Phillips served as the Society's national president from 1974 to 1976, serves on board of Trustees, and is a recipient of the SWE Distinguished Service Award. She is an active member of the American Society of Mechanical Engineers and the American Industrial Hygiene Association and received several appointments and honors from organizations such as the National Science Foundation, the U.S. Department of Education, ASME, and SWE.

In her 2003 Profiles of SWE Pioneers Oral History Project interview, Phillips talked about her experience at Pratt Institute; her early work with the Atomic Energy Commission's Reactor Office; her health and safety work for New York State and the transition into industrial hygiene engineering; pursuing a master's degree in civil

engineering with an environmental basis; her work in industrial hygiene with Shell Oil Company; and her involvement in SWE.

- July 2016

INTERVIEW WITH CAROLYN PHILLIPS, JUNE 5, 2003

LAUREN KATA: It's Thursday, June 5th, 2003. This is an interview can Carolyn Phillips, past president of the Society of Women Engineers and Chair of the SWE Board of Trustees. This interview is for the SWE Oral History Project. The interviewer is Lauren Kata in Detroit, Michigan.

And I'd like to first start by thanking you for participating in the project. Carolyn, can you begin by establishing, for the record, your date of birth?

CAROLYN PHILLIPS: I was born October 11th, 1939.

LK: And can you describe your family background, where you grew up, and your early childhood?

CP: Sure. I was born and raised in New York City in Manhattan, northern Manhattan, as a matter of fact. I was an only child. My father passed away when I was about three years old, which of course meant my mother had to go back to work. And so I was partly raised by my grandmother who came to live with us at the time.

I went to elementary school, junior high and high school in Washington Heights in Manhattan. I can remember my grandmother wanting me to go to some special high schools in New York City, but I wanted to go to a local school with my friends. So I fought on that one.

(Laughter)

CP: No one in my family had much of an education. My mother

had an eighth grade education. My grandmother had emigrated from Germany as a young child, so she had, essentially, very little education. So I was probably the first one in my family that I know of that went on to college.

LK: And do you recall being interested in science or math when you were young?

CP: Yeah. I can remember I think math was always kind of easy and fun, and science was interesting. I can remember a math teacher in high school -- a math and science teacher that I felt very good about who always encouraged me--

LK: That's good.

CP: -- to work at things. And he sort of made that whole area fun for me.

LK: What was it like preparing for college and thinking about where you might go, when you decided, in high school?

CP: Well, first of all, it was deciding that I did want to study engineering, because no one in my family knew anything about engineering.

LK: Did you know any engineers when you were growing up?

CP: No. I hadn't a clue. (Laughs) And I really don't remember exactly, but I suspect it was one of the teachers who mentioned, you know, fields like chemistry and engineering. And another friend in high school kind of got interested in engineering, so we kind of explored the different schools available.

And since there wasn't much money in the family, going away to school was not very realistic, and scholarships just weren't as generous at the time. And so I was really focused on looking at schools where I could live at home and commute. So I looked at NYU [New York University] and Columbia [University] and Pratt Institute, where I ended up going, in New York City, because at the time, NYU didn't accept women in the undergraduate engineering school.

LK: That's right.

CP: So I did fortunately get some scholarship help from the state government, what New York called a Regents Scholarship, based on academic performance, and then later managed to get some scholarship help from Pratt.

LK: And you received your bachelor's in mechanical engineering from Pratt?

CP: Right.

LK: Why did you decide to go into mechanical engineering at the time?

CP: I think probably because I always enjoyed doing things with my hands. Even when I wasn't sure what I was doing, I enjoyed trying to fix things, and I wanted to know how things worked and stuff. And mechanical seemed like it would be more fun and more interesting.

LK: Were your expectations the same as reality during your course work and some of the projects you worked on when you were

at Pratt? Or were there any surprises?

CP: Some of it, yes, and some of it was boring. (Laughter)

CP: I can remember one professor of industrial engineering for example, who -- it was unusual back in the '50s that there were three women in my class in engineering. And he said, "Oh, you girls aren't going to pass my course. Now you're in the tough course." And we looked at the description of the course and thought, "This looks easy." So we said, "Oh, is this guy going to pass us?"

So we just did our work. And at the end of the term he ended up giving two "B's and an "A", or two "A's and a "B" -- something like that. We all did well. So he had to admit that, well, maybe we could do it after all. (Laughs) And we still thought it was an easy course compared to the others.

LK: And were there any other experiences at Pratt that you can think of that affected you?

CP: Well, I think this was when I began to realize that this was going to -- at that point, be kind of a bit of a battle, in terms of being a woman in the engineering profession, that it wasn't just going to be learning the course work and doing the job. We had one professor in a foundry and machine course. This was back in the days when you still did hands-on work in school on machinery and stuff. And he was absolutely petrified that he was going to have women in his lab course, because we were going to

get our hair caught in the machine, and we weren't going to know how to do anything, and all that. And again, it turned out that we did fine. We probably had more patience than a lot of the guys in the class, and took more time to do all the fine-tuning.

And so what else? The other interesting experience was my classmates, because a lot of the guys in the class were GIs, just back from the Korean War. A number of them were married. They were very serious students. All they wanted to do was get through school so they could get a job. So it wasn't the usual nineteen, twenty, twenty-one year-old, "Let's go to college and have a good time." We had some young people in the class like that, but many of them were slightly older and more serious.

LK: And how did your male classmates respond to your presence in the program?

CP: Most of them, pretty well. One experience we had in a sociology course we all had to take, we had a professor who sort of looked down his nose at the women, I think. And he made some real deliberate attempts to embarrass us in class. Like one of the first days of class, he said, "Ms. Phillips, what do we mean by the age of puberty?" I'm sitting there, you know, I'm all of sixteen and a half years old and thinking, "Well, I know what it is, but how am I going to talk about it in this class of guys," you know. (Laughs)

LK: And what does that have to do with engineering?

CP: Yeah, well, it was a sociology course.

LK: Oh, okay.

CP: But it was that kind of thing, until finally, the guys in the class got annoyed with him picking on the girls. And a couple of them went to him after class and talked to him and said they're here to learn. We have to take his course, but let's get on with it -- the course.

LK: That probably felt like a little bit of support.

CP: Yes. So I remember Pratt was a mixture of schools. They had a school of architecture, a school of engineering, a school of fine arts, a school of home economics, a school of library science. It wasn't a traditional liberty arts curriculum. And I can remember one young man sort of teasing us about women in engineering in sort of a social setting. We finally said to him, "Well, what curriculum are you in?" And he said, "Home economics." (Laughter)

CP: And then we just looked at him and said, "Yeah, okay."

LK: Oh, that's funny.

CP: So there were situations like that that kept things humorous.

LK: Did you know during your undergraduate experience that you would go on for a masters degree, or did that come later, that decision?

CP: No. My goal was to get my degree and go out and get a job.

LK: And what was that experience like, looking for your

first job?

CP: (Laughs) That was interesting. When I was toward the end of being a junior and the early days of being a senior, I took a course in nuclear engineering, and I got really interested in nuclear engineering. So I decided that's where I wanted to try to find a job. And I managed to get a summer job between my junior and senior years working for the Atomic Energy Commission Health and Safety Laboratories in New York City. And I mean, all I was doing was drafting and some minor mechanical design and stuff, nothing real elaborate, but at least got me a little foot in the door with the Atomic Energy Commission. Because when I started job hunting, people who came to campus really didn't want to visit with the women in engineering in terms of the job interviews. Those that did were not real enthusiastic. And there were not very many jobs available in the nuclear field. But I tried other fields, too -- I mean, other areas in mechanical engineering. And so the job prospects for the guys weren't great at all. I mean, it was a period when engineering was not in real demand. So everyone was having a little struggle getting job offers. But for the women, at that point in time, it was much harder. And finally a job opened up in the Atomic Energy Commission's Reactor Office in New York City. And I was able to meet the qualifications and get that job.

LK: And how long were you in that role, in that position?

CP: Just about two years. And then the government had what

they called a RIF, a reduction in force. And Atomic Energy Commission employees were not Civil Service protected. So you served sort of at the whim of Congress and what they did to the budget. And so they cut the budget. And that was when I got my first taste of discrimination, because they went through and cut the least experienced person in each department first--

LK: Last hired--

CP: -- which was me. Which I couldn't argue with. I was the least trained in my particular group. But then in talking with the human resources manager, I discovered why I was the least trained at that point in time, I had not yet gone to Oak Ridge and Argon for the major training courses because I was a woman, because they were sure I would get married and leave, so why bother spending all that money training me?

LK: How did you feel--

CP: So, yes, I was the least trained, but the reason I was the least trained was the hidden reason.

LK: How did you feel when you found that out? Do you remember?

CP: Well, the bigger shock was getting laid off in the first place. In its inevitable wisdom, the government told me I was going to be laid off on the last working day of December just before New Year's, then gave me three months to look for a job. And finally when I recovered from the shock of, you know, being laid off from your first job when you thought you were doing a

good job -- it's kind of a shock. And there weren't the kind of layoffs that we're having today, happening all the time. And finally when I asked the human resources manager, "Why couldn't you wait until Tuesday to tell me?" We wanted to give you as much time to look as we could." I said, "Over New Year's weekend?" I mean...

(Laughter)

LK: Talk about a party crasher.

CP: (Sighs) So, you know, the discrimination seemed less of an impact than the actual being laid off at that point in time, because I thought, "Well, then I don't want to work for you anyway." So that's sort of when I started looking -- what else can I do? Maybe the nuclear field isn't the right field.

LK: And so you moved on to--

CP: I at that point stumbled into health and safety work.

LK: Which is something you were exposed to a little bit at the Atomic Energy Commission?

CP: Yeah. I had worked on some safety programs for nuclear devices in space, and so I had some concepts of health and safety and radiation protection and that kind of thing. And I looked for jobs in the nuclear field, and I looked for other kinds of design jobs and other things. And then someone told me at the time that the New York State had an employment service -- not the unemployment service, but an employment service. So well, you know, it can't hurt to go look. So I went and talked to them.

And they said, "Well, we have this whole group of engineering jobs, and there's one here for an industrial hygiene engineer for the state." And my reaction was sort of, "What's that?" I'd never heard of it before. And so I read the job description, which was providing health and safety evaluations through all the industry in New York State. And I thought, "Well."

My first idea, I think, at the time was it would give me a chance to get to know lots of different industries and maybe I could find where I really wanted to work.

(Laughter)

LK: But then, ironically, it became that industry.

(Laughter)

CP: It became that that was what I wanted to do. So I went and interviewed for the job. And the state program covered all of New York State, but their offices were still in New York City. And we talked about the job. And they were interested in my credentials, and I was interested in the job. And then they said, "Well, one problem is that you can't go down in the mines, and we cover the mines." Because at the time, the miners has a superstition, and they would not allow any women down in the mines, period. It was just a longstanding sort of miner decided -- like women and cats on ships and that kind of thing.

So then they said, "Well, do you mind climbing? Because we do air pollution, we do stack sampling, that kind of stuff." I said, "No. I go hiking and climbing all the time." Well, some of

the guys are afraid of heights. So they decided, okay, I'll go up and they can go down.

(Laughter)

LK: So that's how you gained your reputation as the lady engineer that climbs smokestacks?

CP: Right. They weren't exactly smokestacks. They were industrial equipment stacks. But the newspapers called them smokestacks.

LK: I would imagine there weren't many women working in that area at the time.

CP: No. No, I was the only one that I knew of in New York State. I wasn't aware of any other women working in exactly that same kind of engineering job. There were other women doing health and safety work, but I don't think there were in the area that I knew of, in the very early days.

LK: The work that you were doing, it was looking at health and safety, but also the environment, doing environmental study as well?

CP: Right. This was the early days in the '60s when air pollution was just really becoming understood.

LK: Became an issue.

CP: Became somewhat of an issue. And the logical people in the state to handle complaints and stuff were the same people handling the health and safety areas. We didn't have a separate environmental department back then. So those of us who were

supposed to be doing health and safety also did air pollution. If there were complaints about a specific factory and the smells it was putting out from the community, we would do community sampling, and then sometimes we would do stack sampling, to see what was actually coming out of the factory and getting into the community. And we'd answer community complaints, talk to people about the dust in their yard, and then try to figure out whether the plant was not meeting the rules and regulations and what was going on.

LK: Was that just a team made up of engineers or were there other professionals that worked on these projects, these environmental projects?

CP: We worked with physicians, both on the health and safety side and on the environmental side. We had a department with a health physicist in it and some occupational physicians and engineers, and a laboratory, of course, chemists to do all the laboratory analysis and stuff. So it was sort of a team effort.

I can remember one situation -- we did a lot studies -- New York State, upstate, had a lot of talc mines and mills. So we did a number of health studies on the talc millers and miners, the physicians did. And then we would make measurements of the dust in the air and any other pollutants in the air where the employees were working, because that would impact their lungs and stuff.

And (Laughs) one time I drove up with all this medical equipment with a male nurse from the office, and we had some

female physicians. And so I was there a day or two early before the other engineer got there. So I was helping do heights and weights and, you know, the usual sort of backup work for medical exams. And we had those employees so confused between who was the engineer, who was the nurse who were the doctors.

(Laughter)

LK: That's funny. That's very funny. It sounds like cutting edge work in the field of biomedical engineering, perhaps.

CP: Well, it was a lot of fun, because we felt we were accomplishing something. And there was a lot of variety, because I covered all kinds of industry from highly technical IBM factories making sophisticated electronics to cement quarries in cement mills, to talc mills, to smelly paper plants, to silk screening operations to General Electric's foundries. So there was always something new and different to learn and something new and different to investigate.

LK: Was there one industry in particular that you remember being the most interesting or the most challenging?

CP: Well, one of the studies that fascinated me for a while, which I got a special study that I did on rock drills, and how to control the dust during rock drilling. So we set up rock drills in a number of different quarries, and tested different ways of spraying water on the equipment while they were drilling, and the different pressure conditions and stuff. So it's kind of like an interesting research project.

LK: So it seemed like it's a combination of some chemistry, some engineering and math and just general problem solving.

CP: Right.

LK: I mean, was that true?

CP: Yes.

LK: And really, when you were an undergraduate, did you have any exposure to what industrial hygiene--

CP: No.

LK: -- was or environmental engineering?

CP: No. We never really, that I could remember, even talked about that at the undergraduate level. So it was just every day was something new. And I was fortunate to be able to work under a lot of other engineers who had had many years of experience in the field, so I learned an awful lot working under them, and then alongside them, and doing field studies and operations.

LK: Did you feel that it was a general supportive environment for women?

CP: Yeah. The guys I worked with were very supportive. I mean, as long as they could see I was out there, you know, doing the same amount of work they were doing, then my being a woman didn't really make any difference. It led to some interesting situations in some of the field situations, because I'd like show up at a quarry, and there was one office, and there were no women working there, of course. And so the shocked looked on their face that (Laughs) -- "What are you doing here?"

"Well, I don't know."

"We don't have any restrooms for women." There may be one woman in the office, you know, like the receptionist, and that's about it. And all they had was a common restroom. I said, "Well, there's a lock on the door." I mean, you know... (Laughs)

LK: Well, the restroom comment always gets me because I mean, when you live at home you have your brothers and dad and your mom. I mean, you all share the same bathroom.

CP: But that's all right because that's the family.

LK: I guess, yeah.

CP: But then if you went out into the various parts of the quarry, there were little shacks where the workers would put their lunch, keep their notes and stuff when they weren't out working on the machinery. And these shacks were always wallpapered with Playboy. (Laughs)

LK: So you'd just kind of have to brush if off, or--

CP: I -- Well, there's nothing new and surprising here. (Laughter)

CP: You just sort of learn to ignore it. I did find being a woman useful, though, a couple of times, because I learned that when I was trying to find out what really happened in the factory, you know, when was something smelly, or when didn't it go right, or where was the source of whatever the concern was, I could get to talk to the workers. And I'd say, "Can you explain to me how that equipment works?" And I think they would say, "Oh, I'll

explain it to her," you know.

LK: Right. She needs explaining. (Laughs)

CP: And I'd listen, and I'd ask questions. And they'd tell me, "Oh, yeah, every night when we do this, we get this big cloud of dust. And when we do this job, it's noisy. And the machinery breaks down every so often," and stuff. And I'd go back and write my report. And the guys in the office would say, "They never told us that. How did you find that out?"

LK: Do you think that because you're a woman it was less intimidating for the workers?

CP: Yes.. I think they felt good trying to show me that they understood all this and they knew how it all worked. And they would try to explain it to me carefully, whereas they figured the guys should know how it works, you know.

LK: Did you enjoy interacting with the workers that you were helping to study the safety aspects for?

CP: Yeah, yeah. I think that's one of the things that really drew me into health and safety, is that a lot of engineering is fairly technically focused, and it's not very people oriented. And I think by getting into health and safety, my jobs have always been much more people oriented, in terms of being concerned about protecting the health of the employee or the community, a person living in the community. I'm using my engineering skills, but with the end result of protecting the people.

LK: So at what point did you want to take that and apply it to another degree, a masters degree?

CP: Well, when I had first graduated and worked for the Atomic Energy Commission, I had started to go to graduate school at night for my nuclear engineering masters degree, because I was serious at that time about the nuclear engineering. And then of course when I left the Atomic Energy Commission and went to work for the state, I thought, I don't want to waste the time I've already spent. So I was going to New York University. And they had an Institute of Environmental Medicine.

But at the time they had sort of an environmental option in the civil engineering department. So I took some courses in the environmental area and I took some courses at the Institute of Environmental Medicine, and then ended up getting a masters in civil engineering, but with, really, an environmental basis.

LK: And again, it seems like during that time that was right at the beginning of that discipline.

CP: Yeah. And a lot of the courses were still more -- what was called sanitary engineering at the time, which is a lot more water pollution oriented, and that kind of thing.

LK: Did that interest you?

CP: No, not really.

LK: You did research in the area of studying the effects of air pollution on lungs?

CP: Right.

LK: Can you talk a little bit about--

CP: Well, after I had been working for the state for about -- I guess it was about eight years, I had gone back to school to take some additional courses in more health areas, toxicology and epidemiology, and that kind of thing, at the Institute for Environmental Medicine.

And I had a professor up there that kept saying, "You should come and do some research and do some real studies and stuff." And I got to thinking about it, and I managed to get permission from the state to take a leave of absence to go to school full time and do some research. So I went to the institute and got involved in a research project studying the effect of coal dust on the lungs. And we used donkeys as our research animals.

LK: Interesting.

CP: Because the donkey lung is about the same size as a human lung. It isn't quite set up the same way, but physically it's about the same size. And what we would use was radio isotope tracers to see what the lung function -- what effect the coal dust was having on the lung function. And we could put the donkey in sort of a stall with some radio isotope detectors on his back like on a saddle. And he'd stand there for hours and let you make measurements.

So it was kind of fun for a city girl to have to go out to the barn and get the donkey and bring him in to the … (Laughs) So we got kind of attached to our donkeys. And the nice thing was we

really weren't hurting them. They were pretty healthy and well fed and well taken care of, and they didn't get tested very often, each individual donkey. We had a stable full of them. So it was a very interesting experience for a city girl.

LK: Were you ever able to follow up or apply the results that you received in your research in that area as to how it affected workers working in the coal mines?

CP: Well, the particular study that I did on coal dust did show there were some changes in clearance from the lung from the heavier loadings of dust. And the university itself, a number of the people went on and did lots of other studies with regard to cigarette smoke and other pollutants that were a little more applicable to most humans.

LK: So the application of the health and safety--

CP: Like a lot of research didn't, you know, necessarily end up with an immediate effect, but it fed into the other studies that started to have an effect down the road.

LK: The reason I asked the question is because later in your career you've been involved in health and safety negotiations, and just policy, so I was wondering if there was a connection between that at all.

CP: Well, because by doing that kind of research, I became much more attuned to what pollution might do to the lungs and how things would be affected, and different dust loadings and different other kinds of studies that were going on at the time.

So my awareness of the health side of it probably was increased significantly from what I knew from engineering school.

LK: So after working and doing this type of work, it was clear that industrial hygiene was for you.

CP: Right.

LK: And can you summarize your work history after -- from that point on, for us?

CP: Sure. When the leave of absence was over I went back to the State of New York. And a couple of years -- well, just about that time, someone that I had met at NIOSH, the National Institute of Occupational Safety and Health in their training group when I had gone to take training courses on industrial hygiene engineering and that kind of thing, called me about possibly coming to work for Shell Oil Company. But the job that he was talking about was in Wood River, Illinois, which is sort of in the country outside St. Louis. And I was a diehard New Yorker. And the idea of moving to Illinois in the country to a refinery just didn't really interest me. So I turned them down and went back to the state and worked a couple more years.

Then things began to -- in the state -- look like -- OSHA was just coming into play in the federal government, and I wasn't sure what the future of the state was going to be as a long-term career. And I began to kind of look around. I didn't have to get a new job right then, but I began to look at what else might be out there. And by this time we're talking 1974, and people are

more willing to talk to women in engineering than before. And of course, I had some experience to sell that I didn't when I was a new graduate.

And the guy from Shell called me back again. And this time he's talking about a job in San Ramon, California. And I thought, "Well, San Francisco's right across the bay," you know. I said, "So I'll" -- you know, so I interviewed for the job. And they apparently, unbeknownst to me, had been thinking about starting an office for the region in the New Orleans area. And it turned out that one of the other people they interviewed for the job already lived about ten miles from the office in San Ramon. So they decided instead of trying to make a decision between the two of us they'd hire both of us.

LK: Oh, great.

CP: But since he was already there, he got the California job. And then I got the job offer, which in hindsight was a better deal, because I had the chance to start the office in New Orleans. There was a shell facility there, but nobody doing industrial hygiene for the company. So I accepted the job in New Orleans.

LK: And you've been a southerner ever since.

CP: Yes.

(Laughter)

CP: I always said I would never live down south, won't live down south. (Laughs) But unfortunately, I -- well, not

unfortunately, but my only experience with the south prior to that had really been Miami Beach in the summertime, which was not very representative of the south. So I moved to New Orleans in 1974, the end of 1974. And for a born and bred New Yorker, it was culture shock.

LK: I bet.

CP: It was a great city to live in, but it took a little getting used to.

LK: Sure, sure. Did you enjoy the industrial hygiene work that you did for Shell Oil Company?

CP: Yeah. It was very varied, because I was helping chemical plants, refineries, offshore oil rigs, gasoline marketing terminals, all kinds of facilities -- research laboratories. I tried to implement the early days of an industrial hygiene program, and sort of grow the office in New Orleans. I mean, I started with me and then added people over the next three or four years to help do the work. So it was a great challenge both in developing the office as well as actually getting the work done out in the field.

LK: Do you remember any kind of project or work situation that sticks out most in your mind from your industrial hygiene career at Shell?

CP: Oh, dear.

LK: Probably a loaded question. I don’t mean to put you on the spot.

(Laughter)

CP: After twenty-five years you want me to remember that? (Laughs) Well, one thing I learned, we had a herbicide pesticide plant north of Mobile, Alabama, very southern. (Laughs) And I thought, "How is this Yankee going to get to know these guys from Alabama and get the same relationships with them that I was able to develop with the workers I talked about before in New York State.

And then I've got to understand how this plant really works, because sometimes I would get different results from some of the measurements I made depending on who was working. I thought there's got to be a reason for what's happening here. And I finally realized that just by sitting around the control room of this big chemical plant and getting to talk to the workers was probably the first step -- I mean, for them to be comfortable talking to me.

And I realized that they were really interested in baseball, and coming from New York, I'd been a real New York Yankees and Giants fan, and I knew a lot about baseball. So we'd get talking about baseball. Then I realized that every single one of them loved to go bass fishing.

And I didn't know anything about bass fishing. So I just asked questions. You know, "What makes a good bass boat?" And I'd get started talking about engines and boats and all this kind of stuff. So before long, we had a real rapport going. And then

when I started talking to them about how the job was going and what was happening in the plant, I got--

LK: Then it just came naturally.

CP: It just came naturally.

LK: It's interesting, though, that you had kind of -- I mean, you always had the gender culture shock or--

CP: (Laughs).

LK: -- you could call it that. But then the northern/southern culture shock adds a layer.

CP: Yes.

LK: So that's very interesting.

CP: And then the other was the first time I said to the exploration and production people, "Well, how do I schedule to go visit an offshore platform?" "Oh, you want to go out to one of the platforms?" I said, "Yes. I can't really tell whether there are any issues to be addressed out there if I -- reading the book doesn't help. I need to go on site and take a look. I don't need to go to every one of them, but I need to go to some of them." "Oh." I said, "What's the problem?" And he said, "Well, what happens if you get" -- at that point the platforms had dormitory housing, except for the foreman who was running the platform.

LK: So you had to spend days at a time there?

CP: Well, the concern was, "Well, what happens if you go out to the platform on the helicopter or the flight, and you get fogged in overnight," which often would happen in the Gulf. And I

said, "Well, what do you do when you go out and you get fogged in?" And he said, "Well, I usually take over the foreman's room." I said, "Well, I could do that," or I could sit in a chair in the lounge and sleep. You know, if I miss sleep for one night and only took a nap, the world wouldn't come to an end." (Laughs) At that time I was a lot younger, and you know, what's a night's sleep? This is not the end of the world.

And then it turned out one of their concerns was that sometimes when they showed movies offshore, they'd get calls -- complaints from the wives about the kinds of movies they were showing.

LK: Really?

CP: And they were worried that when the wives heard there was a woman offshore staying overnight what kind of complaints they were going to get. (Laughs) And then of course, shortly after that -- I mean, this the '70s -- late '70s, '75, '76, and shortly after that, Shell and all the oil industries started hiring more women geologists, geophysicists and other engineers who had to go offshore, and so that all started to change significantly.

LK: Well, that was going to be my question. I mean, at what point did you stop being the only woman?

CP: Yes, shortly after that.

LK: So in terms of technical professional development, you were involved with the Industrial Hygiene Association?

CP: Yes.

LK: Can you talk a little bit about your involvement with them before we talk about SWE?

CP: I'd been active in the association, at the encouragement of Shell. I mean, they supported your being active in your professional organization. And I got involved in a number of technical committees for the American Industrial Hygiene Association, and also the Academy of Industrial Hygiene.

One of the credentials, if you're in the field of industrial hygiene, is becoming a certified industrial hygienist, which is kind of equivalent to the professional engineering license exam. You can take an industrial hygienist in-training exam, and then after you've been in the profession four or five years you can take the full certification examination. So when I first went to work for Shell, that was the expectation they held out was that I would very quickly get certificated. It had not been important for the state. I had to have my PE [Professional Engineer's] license when I worked for the state. But Shell expected me to become certified.

And then after I became certified, I began to get more involved in the association and committees. And then I was asked to run for a seat on the board of directors. I think that was in the late '70s. I don't remember the exact dates anymore. And so I spent three years serving on the board of directors for the association.

LK: And were there many women involved at the time, or has that evolved, or--

CP: That's also evolved, the same way the number of women in engineering has evolved, is that the numbers of women when I first used to go to conferences were very small, a handful, and now there are -- maybe a third of the attendees -- a quarter to a third are women. So it's changed significantly over the years. And currently -- my last few years at Shell, I'd been asked several times to run for president of the Academy of Industrial Hygienists, which is the organization of the certified industrial hygienists. And as busy I was traveling for Shell I kept turning them down. And then when I retired, then they called again and said, "Well?"

(Laughter)

CP: I'd run out of excuses, so currently I'm serving as president of the Academy.

LK: Oh, great. Was it difficult, when it came time, to make the decision to retire?

CP: No.

LK: Okay.

(Laughter)

CP: Not at all.

LK: And you also became involved in consulting, correct?

CP: Yes. But I don't work at it full time. One of the things that I spent some -- a lot of my last five years at Shell,

I was sort of Shell's Washington person. I spent a lot of time with OSHA, with other agencies and associations, trade associations worked with regulatory political issues in Washington. So I was traveling to Washington a great deal, which is one of the reasons I really couldn't get involved in too many professional association kinds of things.

And when I was also doing that, I was working a fair amount for the Shell lawyers when there was litigation. When someone was complaining they were sick because they'd been exposed to a Shell product and were suing the company, I would get involved in working with the lawyers, helping them understand what we did or didn't do in the workplace, or what we did and didn't do for customers on health and safety. So now that I've retired, I spend more time doing that for Shell. It's kind of a continuation, since I was so familiar with all the programs, you know.

LK: Sure, right. That makes sense. And you've enjoyed that?

CP: Yes, very much. When it came time to retire, I had planned to retire about two years later than the date I actually required. But Shell, as many companies, had been going through opportunities for changes. (Laughs) They had some reorganization and a very nice early retirement offer, which about took me up to my two-year target to retire. So myself and several other people in our department said, "Okay. We'll go."

(Laughter)

CP: So I was one of the fortunate ones that got the opportunity at just about the right time.

LK: Can you talk a little bit about the work, or the service that you gave to OSHA?

CP: Well, one of the things that a number of the trade groups that I worked with in Washington with the other companies was the companies – first, years ago, the companies fought OSHA. "We don't want OSHA. We don't want all those regulations." But then companies began to realize that we were far better off with good regulation than fighting bad regulation all the time, and going to court every time because the regulation was poorly written, and that kind of thing.

So a lot of the effort we put into the Chemical Manufacturers Association and ORC and American Petroleum Institute was to try to work with OSHA, and sometimes with EPA, to get the regulations in such a way that we could live with them on a practical basis, and still accomplish what OSHA was trying to accomplish.

But in many cases the regulatory people didn't really understand how the workplace really functioned, so their regulations weren't always realistic. The goal was okay, but how they expected us to get there was often not the best way for us to do it.

And oftentimes, as a result, if the regulations seemed industry-favored, the unions would take us to court. Or some trade association who didn't like it would take OSHA to court.

And if it was too rigid, then a lot of the companies would take OSHA to court. And so half the regulations were ending up in very expensive long drawn out court battles, which was a waste of resources for everybody.

So on one chemical, butadiene, which was important to Shell and to the rubber industry, we got a negotiating team together composed of union people, representatives from the rubber industry, and I represented the chemical industry. And we spent months and months negotiating about what should be in the standard. Not negotiation in the sense of a labor contract, you know, the salary and stuff, but negotiations saying, "Okay, this is the level of exposure we want to reach. Now what can we live with to reach that level of exposure?" And the unions would say, "Well, we like it to be this way, but we can understand that's difficult."

So we'd go back and forth on trying to write the right regulation that we could all live with, that maybe wasn't perfect, but would move things forward and wouldn't end up in court. And that was the best thing was that the regulation was passed by OSHA after they made some adjustments in it that none of us liked. But anyway, it wasn't worth going to court over. So that was one of the few regulations that got on the books with nobody suing.

LK: Wow. Is that what you would say one of the most important roles that an industrial hygiene engineer has, just in terms of the negotiating?

CP: Well, I think, you know, the prime concern for an industrial hygiene engineer is the basic control of exposure in the workplace. I mean, that's sort of our prime directive, if you will: What can we do to prevent chemical, noise, radiation, whatever, exposure in the workplace? And having to live with a regulation is just part of how you do that. But from the engineering viewpoint, it's how do you put the controls on the system, the ventilation system in, the process controls?

I remember one case when the government was doing a study of butadiene, which is a very volatile and explosive material. And the gentlemen from NIOSH kept saying, "What controls did you put in to control exposure? All these controls, you know, what did it cost you to put them in to control exposure to the worker?" We said, "We didn't put those controls in primarily to control exposure to the worker. The controls were put in to keep the plant from blowing up." You know, step one, if we didn't have them in, the risk of the plant blowing up was significant. Now, they also protected the worker, but that wasn't the reason from a health exposure viewpoint they were put in. And you had a hard time convincing them that they shouldn't count that as the expense of protecting the worker, and from a health viewpoint.

LK: Do you think that it's a challenge to educate the public on what environmental engineering or industrial hygiene engineering is?

CP: Yeah. I've spent most of my career -- when I say to

people, "I'm an industrial hygienist," or, "I'm an industrial hygiene engineer," it's sort of like, "Do you have something to do with dentists?"

(Laughter)

CP: It's been very hard to have the profession have any real credibility, because people just don't understand. The British call it occupational hygiene instead of industrial hygiene. I don't know if that helps or not. But really, the whole profession is sort of becoming environmental health and safety professionals. I mean, that's sort of where things are heading. People are becoming a little more generalist, covering a broader area. But I think more and more, people are beginning to understand what industrial hygiene is. Nowadays when I tell people that's what I do, some of them say, "Oh, that's got something to do with OSHA and health and safety, right?" So we're getting there.

LK: Progress.

CP: Progress.

LK: Do you have any final thoughts just about your engineering career from an industrial hygiene or a technical perspective before we take a break?

CP: I think that probably to me, what I stumbled into as my profession, that I hadn't planned on getting into has turned out to be a lot of fun, because all through my career in industrial hygiene and engineering it's been something different all the time. And things that I thought were the right thing to do and

good back in the ‘70s, we’ve learned now, should be done differently, could be done better. There are different kinds of things. Things we thought were safe we now know really weren’t good. But there’s always been something different, something new coming down, a new hazard developed, a new way of approaching it, a new kind of control to put in, a new kind of process to learn about as industry changes there’s a new process. And so there’s always been something new and something different and something to learn, which has kind of kept the job fun.

(INTERRUPTION IN RECORDING)

LK: This is tape two for our interview with Carolyn Phillips. Can we begin talking about your involvement with the American Society of Mechanical Engineers? Can you give a history of your involvement with that organization?

CP: Well, as a mechanical engineering student, I became a student member of ASME, when I was the Pratt Institute. And I was fortunate to be given a scholarship from what was then the Women’s Auxiliary, the spouses of the engineers, when I was a senior, which helped me pay for my senior year at college.

LK: Did you interact with the Women Auxiliary much, or--

CP: Other than to meet with them when I got the scholarship, no.

LK: And then from there your involvement?

CP: Well, when I graduated, I became a member, but really didn’t do much to the first year or so, like many new kids first

out of school. And then at some point in their newsletters they were saying, you know, "We need to get more people at meetings and more involved." And I thought, you know, I should go and see what this is all about. They did give me a scholarship. I enjoyed it when I was a student member. So I went to a New York Section meeting. And somehow, before I knew it, I was involved in their Student Activities Committee. (Laughs)

LK: You never know how these things happen, right?

CP: Yeah, all of a sudden. But there were some interesting experiences, because at that point in time -- and I'm talking the early '60s here -- ASME, New York Section, met at the Engineer's Club in New York, which did not allow women members, and didn't allow women in the bar or here or there. And I just about was allowed to go to one of the meeting rooms for the section meeting. So that sort of barrier finally, you know, broke down over a number of years as there were a few more women getting involved in the other engineering societies, as well as ASME. And then I guess a few years later I was asked if I would be willing to run as secretary of the section. So I became the secretary of the New York Section.

LK: So you had a sense that it was important to be involved in your technical societies?

CP: Yes. I'm not sure back then I called it networking. I don't think we knew the term back then. But it was sort of that, that if I really wanted to know what was happening in my

profession outside of my job, then something like ASME was the place to be, where I would meet people in other kinds of companies, see what other engineers were doing, and get to know them one on one, and contribute back to my profession.

LK: There's a historian, Bruce Sinclair, who's written about engineering societies. And his view is that what goes on in the profession, it really makes a difference at the local level versus the national level. Would you have a response to that, or do you have a perspective on that?

CP: I don't know. I experienced ASME activity at the local level and at the national level, because I moved up in several different boards and committees at the national level. I guess to me it's more of a difference in what's accomplished. The local sections are usually much more focused on working with the student sections -- at least when I was active. And it's a chance for you to meet and work with the people in your local environment. Whereas nationally you go to a committee meeting and you meet people from all over the country, but then you don't see them again for four or six months until the next committee meeting or the next conference. And so it's different relationships and different kinds of things that are accomplished at the local level.

LK: Okay. Let's shift gears and talk about how you first heard about the Society of Women Engineers.

CP: Well, I don't remember hearing about it when I was a

student at Pratt -- although there was a New York Section. If I did hear about it, it sort of (Laughs) went right past. But I think it was toward the end of my senior year or shortly after I graduated I heard about some kind of meeting with the New York Section, and got an invitation. I assume that they got our names from the university.

And my first impression of SWE at my first meeting, and I think what got me started was Alva Matthews. Because here was a very attractive young woman who was, I think, working on her Ph.D., doing some really interesting work in her field. And gee, I could aspire to be somebody like that.

(Laughter)

So I think it was meeting Alva, and then the other women -- but I can remember specifically meeting Alva at that first meeting we went to with some other students or recent graduates, where I learned more about SWE. And then I graduated in '60, and I ended up joining SWE in '61.

LK: And why was it important to you to actually join SWE officially?

CP: Well, I think it was -- I was already, you know, a little involved in ASME. I was meeting people in my technical area of interest, but within SWE I was beginning to meet women with all kinds of diverse backgrounds, people doing electronics work, people doing aircraft work, people doing industrial engineering, a whole different variety of different kinds of

things that I wasn't getting at work or from ASME, which was kind of interesting.

LK: Do you think that it was, I mean, just interesting, or neat, or do you really feel like it impacted you as an engineer to be exposed to that?

CP: Well, I think, particularly in the early days -- you know, when I first got out of college, I was twenty years old, I was pretty young, pretty naive, not very experienced in industrial company ways and that kind of thing, didn't have much background from my family as to how things worked in the real world. (Laughs) And SWE kind of helped me gain some of that without my feeling foolish about it or anything. SWE, I think I recognized early on, was a chance where I could develop some leadership skills, where I could get involved. And it was, to me, a safe place to do it because the other women were supportive. If you wanted to try something and do something, you were encouraged.

And that's when I started to meet people like Ruth Shafer and Dorothy Morris and Elaine Pitts, and people who said, "Go for it," you know, "Do it," kind of thing.

I know Ruth Shafer kept twisting my arm to get involved and run for local office and do things. So before you knew it, you were doing it.

(Laughter)

CP: You just go, "Me, I can't do that," you know. (Laughs) And then it was only a few years later, a year after I joined SWE

that we started working on the first International Conference of Women Engineers.

LK: Right, in New York.

CP: In New York.

LK: Can you talk about that, being involved in that?

CP: Yeah. This was sort of a dream of a few women as to how to get this going and get women engineers from all over the world to come to New York during the World's Fair, and have this first International Conference.

LK: How long were they planning it before 1964?

CP: Oh, two to three years.

LK: Were you involved in any of those discussions or do you recall?

CP: Well, I was too young and too new to be involved in a lot of the discussion, but I was aware of what was happening in terms of trying to get other governments and other countries to support women to come to the conference, getting our government to support helping bring them in. I mean, there was already a women's engineering society in Great Britain, but there weren't many other organizations in the rest of the world. So it was finding the women and bringing them in, and then planning the actual conference itself, and then how to greet them, meet them, take care of them while they were here, and that kind of thing.

LK: And what was your role in that planning process?

CP: Well, because of a conflict, I was not able to stay for

the whole conference. But I spent a lot of time stuffing envelopes and putting programs together, and you know, the physical getting ready. And then at the conference, I sort of drove people to the airport to meet people, to greet them at Kennedy, particularly, and bring them into the city, because many of them, of course, had never been to a big city like New York before. So we'd do --, you know, so-and-so's plane is coming in. We'd do a mad dash to Kennedy to pick up somebody and bring them in, and try to welcome them and take care of them.

LK: And what was it like being around all of those international women engineers?

CP: Oh, it was fascinating. Growing up in the United States, even though New York is an international city, you're just not that exposed that much -- at least back then you weren't -- to the different cultures and languages and dealing with people. I mean, you'd see it on the news and stuff, but trying to have dialogue with someone from Japan who spoke almost no English, and people from some of the European countries with somewhat limited English or very, very strong accents in their English, and then trying to understand them and dialogue with them, is an interesting challenge. You begin to realize that the Americans don't have very good language skills. So it was a lesson in a number of different kinds of ways. But what you really boil down to was when you talked to people, their issues and problems were probably the same as ours, maybe magnified in different ways.

LK: Can you expand on that a little bit?

CP: Well, I think the issues of, you know, can I have a technical career and have a family; you know, am I being treated properly in the workplace; am I getting fair treatment in the workplace; how do I advance my career; how do I raise my children and keep up with the profession; and that kind of thing, which are really universal issues. I mean, it's a little different -- with a different flavor in different cultures. And there are different attitudes toward women in different cultures that change over time. Different parts of the world have different economic situations.

LK: Different industries.

CP: Different industries. So the availability of jobs was very different in different countries, just because they may have been much in the technical industry in a particular country. But still, the basic concerns and problems weren't all that different.

LK: And you've remained interested and involved in the international conferences over the years through SWE?

CP: Yes. I've been to at least five of them.

LK: Is there one that stands out in your mind more than another?

CP: Probably the second one -- besides the first one, which was the big, you know... Probably the second one at Cambridge in England. One, is you got to see again some of the people you'd met four years before in New York. And it was my first trip to

the United Kingdom, so that was a first. Just the different ways they did things.

LK: We have all these images of the snapshots of the audience during a technical presentation, and it's almost -- it reminds me of a United Nations shot--

CP: Yes.

LK: -- a meeting where everyone is wearing headphones and--

CP: Yeah.

LK: -- maybe dressed a little bit differently, but you're all listening to an engineering topic.

LK: We had an interesting experience at the conference in Poland in 1975, in Krakow, which was -- of course, Poland back then was still a communist country.

And we were very carefully warned about what we should do and shouldn't do and that kind of thing. And I can remember, this is 1975, in a major city in Poland, and we woke up one morning hearing horses outside. And we look out, and it's the horses pulling the coal wagon to bring the coal to the buildings. So you know, you just don't expect it. And then as part of the conference we got a trip to a salt mine. We'd always heard, you know, "Ah, we send them off to the salt mine." And so we really went down into a salt mine in Poland that had been there for centuries. And so having been to many mines in the United States at that point in time, to be able to go in a mine that was still being held up by beams that had been there for centuries was kind

of mind boggling. And so it was those kinds of things, I think, that happened at international conventions, things that you don't see in the States that have an impact, both from a personal interest viewpoint and from just the engineering of it, as well as the art. In this case they had a huge chapel carved out of salt down in the mine, with the whole Lord's Supper carved out of salt. And salt crystal chandeliers. So it was a whole, you know, interesting experience. But then we also had to be careful because people would try to have us change money with them on the street. And we'd been warned by our consulate that we could end up in jail. You know, don't do that, because the Polish money was worth nothing outside the country at that point in time. So it was, you know, living for a week in a whole different culture.

LK: It sounds like a very interesting experience.

CP: And again, seeing the women from all over the world, in different costumes, different culture. I can remember some Russian women always with their interpreter. No matter where they went they had their interpreter with them. Except one morning when they came down and the interpreter overslept. And all of a sudden it turned out these women could speak some English. (Laughter)

CP: As soon as the interpreter showed up, no more English.

LK: What are your thoughts on how that international network has evolved, now that there's -- it's no longer just the conference, it's an actual group, INWES [International Network of

Women Engineers and Scientists].

CP: Yeah. It's going to be interesting to see how that develops. I mean, it's still the new baby. I think we still have to see what the long-term benefits are. I think it's the right thing, we're headed in the right direction, because we've always just had conference, conference, and other than personal communication, nothing in between. And I think some continuity would be great, but I think it's a little too soon to tell how it's going to develop. But I think it's going to be interesting.

Because I'm involved in another service organization called Zonta, which is an international organization for business and professional women. And I have, you know, lasting friendships with women in several different countries around the world, from seeing them at conferences every couple of years and having some dialogue with them in between.

LK: Do you think that the communication technology has helped with keeping that network going?

CP: Yeah. I have friends in Finland who don't have e-mail, but I can every once in a while send them e-mail through their grandchildren.

LK: Oh, right.

CP: So you never know what's going to work. (Laughs)

LK: That's funny. You were president of SWE at a very important time as far as the women's movement and American history is involved. Can you talk about how that impacted SWE or some of

the issues that came up while you were president?

CP: Well, one issue that came up, in 1975 I believe it was, everything was changing in terms of women wanting men's organizations to accept women into them, and so the turnaround was that women's organizations needed to accept men into membership, particularly for some government situations. And there was growing pressure from the academic community to have males involved in the student sections and that kind of thing.

And so we had a proposal, a motion on the table at the council meeting in 1975 to -- we had had a men's auxiliary before then. So men who wanted to support SWE could join the men's auxiliary. And many of the men who were members were spouses of women members, although we had a few other men that joined.

And so it came time that we really needed to vote on whether to accept males into full membership in SWE, if they were qualified to be members. And if not, they could be affiliate members. And it was a long, long argument. [It] went on for quite a while at the council meeting, because particularly the younger women said, "Of course," you know. "The students need to do it, we need to do it." But some of our older members, our senior members just had this vision that the men would take over.

LK: You're kidding.

CP: No. And that, you know, if we allowed men into membership that they'd run for office, and the next thing you know we'd have a male president and they'd be running the show. And so

as a society we had to work that out and argue it out at the council meeting, because they were represented on the council, and they had a right to have their opinion.

So we had quite a dialogue, but the vote, of course, at that time, passed by a very clear majority. There wasn't any real question. But there was quite a concern what would happen.

And of course, after that -- subsequent to that, nothing significant happened. We have a number of male members, pretty much the same kind of person, who have been very supportive, continue to be supportive. And we've had one or two students, I think, on the council, males. And we've had a few section officers that have been males, including student sections and regular sections. But other than that there hasn't been any mass interest in men running the society.

LK: Do you think that it would be appropriate for a man to be on the SWE National Board of Directors?

CP: Well, I don't see why not if he's been interested enough to do all the work at the local section and move up.

LK: Prior to that vote, SWE had already officially endorsed the ERA at that time?

CP: Yes. And in fact, we had pulled the convention out of Atlanta because they had rejected the principles.

LK: The state of Atlanta had?

CP: The state of Georgia.

LK: Oh, I mean -- excuse me, yeah. The state of Georgia had

not ratified ERA?

CP: Right.

LK: Well, SWE actually had the convention there -- or -- in 1978?

CP: I'm trying to remember. It was before that. We were supposed to have a convention in Atlanta, and we changed it and did not go Atlanta.

LK: Okay. Or that was the issue, and then -- what I understand is that that was the original plan, but there were all these commitments made to some corporations and to the section, and so there was still some kind of a meeting?

CP: I'm trying to remember. That was before my time, so I'm afraid I'm fuzzier than I realize.

LK: That's okay.

CP: No, I'm thinking. I really don't remember.

LK: Right. But the main issue is just that SWE was involved in taking a stand about women's rights--

CP: Yes, yes.

LK: -- at some point, and especially during your presidency.

CP: Yeah, and we couldn't not. I mean, this is what we stood for, is that women engineers should have equal opportunity in the workplace, so therefore it just meant that women should have an equal opportunity. Not an advantage, but an equal opportunity.

LK: And you were involved in -- well, as SWE President you

represented SWE in the Federation of Organizations of Professional Women?

CP: Right.

LK: I mean, was there a lot of activity going on in that organization that you can recall, or not?

CP: There was a lot of dialogue, but not a lot got accomplished. We thought that might really grow into be something, you know, that would grow and be supportive. But in my memory, it never really strongly got off the ground. It had some meetings, but it didn't really develop into... The other thing we accomplished, though, during my years, is we allowed student representation on the council.

LK: Why was that important?

CP: Well, until they we'd had lots of student sections out there and lots of interest in the Society. And of course, that's the future, both for the society and women in engineering and the students, but they had no voice in SWE. They were the largest number of our membership in terms of numbers, but they had no real voice in what happened in SWE and what was important to SWE. So that was the first time we decided to have some student representation on the council. And of course, that has grown since then in numbers over the years. So I think those two things were the two big changes.

LK: How do you feel that SWE has grown since you first joined in 1961 and then as a leader? I mean, of course, now

you're still a leader as chair of the trustees, but...

CP: Well, you know, when I first -- I'm trying to remember my -- besides the International, my first regular SWE convention -- one of my first ones that I can vividly remember was in Phoenix, Arizona. I think it was 1966. And the entire convention could sit around the swimming pool. And by the end of the convention -- which didn't have a student conference, it was just a SWE convention of three or four days -- you knew everybody. You know, it wasn't a huge number of people.

And so now I've seen SWE grow from that to now where we have exhibits in conference centers, and have huge numbers of students involved, and a whole different scope in terms of the conference. I mean, it was that everybody went to one little session, and that was the session. And now we have breakout sessions and exhibits and recruiting, and all kinds of things for students that we didn't dream of doing back then.

And of course we now have corporate support that we didn't have back then. Financially SWE has come a long way in terms of what finances that we had available to do anything with, and companies were just beginning to be supportive.

In fact, I can remember when I first accepted the job at Shell in 1974, I was in the middle of my first year as SWE president. And so when I said to Shell, "Well, there's one other thing." (Laughs) "I'm currently president of the Society of Women Engineers. What is the impact going to be? This requires

me to travel to some student sections and this kind of thing. And Shell's first question was, "Is it a nationally recognized engineering society?" And I said, "Yes. We're members of the Engineers Joint Council. We're accepted -- we have an office in the Engineering Center. And so they did some checking to make sure that we had the engineering credentials, which was fine, because they hadn't really heard of us. And they said, "Fine. Our policy is that we support national officers in professional societies. Go for it."

LK: That's great.

CP: So they paid for lots of trips to student sections, to give charters and meet with students, go to career guidance conferences, as well as going to the board of directors meetings. And so that was reassuring to me that they were treating SWE just like any other technical professional organization, that they had a policy, and it met the policy, so they didn't ask questions -- "Well, it's a women's group," or anything else.

LK: It seems like a subtle form of support that you might not recognize, but a very important one.

CP: Right. Well, in fact, interestingly enough, I had also submitted a paper to give in Krakow in 1975, before I even talked to Shell about a job, and then had the paper accepted. So I'd been with the company like four months, five months, and went to my boss and said, "What do I need to do with this? Do I need to turn them down?" I had no expectation that Shell was going to

send me to Poland. I had been going to take -- when I was with the state I was going to take vacation time and go to the conference, as a vacation. And so I thought, "Well, I won't even have enough vacation time accrued by then to do that."

And he said, "Well, leave it with me." And he said, "What's your paper about?" And of course it was about health and safety, industrial hygiene. So I left him the abstract of the paper and stuff. And he says, "Well, let me see." And I just sort of forgot about it and thought, "Well, that's a dead issue," you know, (Laughs) having been used to New York State where you never got support to do any of that stuff. And about a month later he comes back and he said, "Okay, accepted." And he said, "Why don't we -- we're going to have you meet Dr. Ross over there, and then the two of you can visit the facilities in Holland, and you can visit the" -- so this grew (Laughs) into a trip to Shell facilities in Europe.

LK: Wow, which was probably very useful.

CP: So that was a great learning experience for me. Didn't hurt my future in the company at all. And it was very reassuring that the company was willing to support me in going to the conference in Poland. As long as it was related to the job, and you know, it clearly was. So that's a case where SWE and the International Conference kind of helped me understand what Shell was willing to do, too. So it was a good learning experience all around, because it didn't hurt Shell to have me presenting a paper

at an international conference. And I met some other women from Shell there, in Malaysia and Holland.

LK: Oh, wow. Were they involved in any kind of women's engineering organization?

CP: One wasn't really an engineer, but she was trying to help Shell in Europe -- in Holland develop more women engineers and scientists on the payroll in some form or fashion. And the other woman was with Shell Malaysia. She was an engineer by training. And I don't think they had an engineering organization.

LK: Okay. Yeah, that's interesting. You mentioned something when you were talking about their researching SWE's credibility, about SWE being part of the United Engineering Center.

CP: Uh-huh.

LK: That was important?

CP: Well, I think it was important to SWE in the early days. In New York, in the '50s and '60s, the engineering societies built the United Engineering Center -- in the '60s, I guess it was. And that was the headquarters of all the engineering societies. ASME, IEEE[Institute of Electrical and Electronics Engineers], ASCE [American Society of Civil Engineers], they were all headquartered there. The library was there; the resources. That was the focal point in the engineering profession.

LK: So if you were an engineer--

CP: If you were an engineer or you were an engineering

society, the logical place for you to be. So SWE in those days really considered it important to have an office in the UEC. I guess it was in the '50s it was built, because the SWE office, I think, opened in 1960. And it was a little tiny office, with one person, Winnie White. But it was an office in the UEC. You were on the list, you know, the Society of Women Engineers. That always seemed to be important. And since then, all of those societies have scattered to the wind. There is no more Central Engineering--

LK: As a New Yorker, do you remember feeling a sense of ownership to the SWE office, or--

CP: Well, it was interesting. Because we were there in the New York Section, and the New York Section was a pretty large section, and we didn't have much staff in the office, when anything was happening, if the board was coming to town, or for the International Conference, everybody looked to the New York Section, to stuff envelopes, put mailings together, get speakers together -- whatever. So the New York Section was always doing. And then people in other sections would say, "But New York Section gets all these privileges, because headquarters is there." And we'd say, "Wait a minute. What privileges?"

(Laughter)

CP: "We get to do all the work." (Laughs) So there was this, sometimes, perception from other sections that we had extra privileges. Now, sometimes we did get a visit from the

international president or an officer who was in town that other sections wouldn't get.

LK: One thing we didn't touch on is your involvement with the Houston Section of SWE, when you relocated to Houston before you worked with Shell. Can you talk a little bit about that?

CP: Well, I got a little bit involved first in helping with the New Orleans Section--

LK: Oh, that's right, chartering.

CP: -- or what was the Louisiana Section, and chartered it.

LK: It was important to you to bring a SWE presence to your new location in Louisiana, or--

CP: Well, I was -- well, yeah, because when I first moved to New Orleans there was no support system. There was no SWE section, I didn't know anybody else with the company. I didn't have any friends or family or anything in Louisiana, so it was like no support system until I grew it somehow. And I wasn't really involved that much in the founding of the section. There were a lot of active people that had a role in that because I was so busy with Shell, and with learning my job with Shell, and with SWE National. But it did give me pleasure to be able to charter, eventually, the Louisiana Section.

And then the Houston Section already existed when I went over to Houston. So Houston was -- good to get involved with an active -- and help a local section again.

LK: And what year did you relocate to Houston?

CP: 1980.

LK: And you continue to stay involved in some way with the local?

CP: Yeah. I try to -- to me, the important part of -- once I'd been SWE president, was not for me to be involved in trying to help manage a section anymore. But one of the real benefits of being involved in a section, particularly for the younger women engineers, is the growth that they get out of being leaders of the section, and trying to develop programs and be leaders and stuff. And so I felt that my role that would make me feel good was to try to just be a help and a mentor, and you know, be available if they needed me for something, and go to meetings on some kind of regular basis.

LK: Do you feel like you've mentored many women within SWE?

CP: Yeah. It's always been a pleasure over the years to have gone to career guidance meetings at colleges and stuff, or student section meetings and stuff, and meet with students and get to know them, and then years later, see them move up the ladder in their careers, and also to move up on the ladder in SWE. I remember being to several conferences in Iowa and met two future presidents of SWE, which I didn't know at the time, as students -- in terms of Maggie Hickel and Barbara Wollmershauser, and could see students that I had fun with, and you know, learned some respect for when they were students, stay active in SWE, and develop into leaders in SWE. It's nice.

LK: That sounds very rewarding.

CP: I still have some memories, though, because one year when I was there, they found out that it was my birthday, so they gave me a college T-shirt with my age on the back of it as the number.

(Laughter)

LK: Nice. It's all in good fun.

CP: I also remember going -- lots and lots of memories of student stuff, going to a career guidance conference in the Upper Peninsula at Michigan Tech. And it was very hot in the summertime, and they're not used to heat up there.

LK: Right. (Laughs)

CP: And of course, we're staying at the university. So one evening, the students said, "We're not going to stay here tonight. We're going in. You want to come join us?" I said, "Yeah. Where you going?" "We're going to the library." I said, "The library?" And they were like, "Wow, we're going to the library." Well, I discovered that the local bar in town was called The Library.

(Laughter)

LK: That's funny. Is it still there today?

CP: I have no idea.

LK: We'll have to check that out. So now your involvement with SWE is through the Board of Trustees, primarily.

CP: Right.

LK: Can you talk about how you first became involved in

service to SWE in that capacity, and why you decided to do that?

CP: Well, back in the '80s -- the Board of Trustees are like the other offices of SWE, they're elected by the membership -- and I'd been last actively involved on the board or anything back in the late '70s. And they were looking for nominees for Board of Trustees, and somebody asked me if I'd be interested in serving, and if I had the right credentials to serve, interested in investments and stuff. And I said, "Well, yeah. I think I know something, but okay." (Laughs)

So I did get elected, and it's been great fun ever since. It's a different way for me to serve SWE, and I think a way that have and can continue to contribute over the long run. It's a very different position than being on the Board of Directors, because you're not involved in the running of SWE at all, you're only managing certain financial funds for SWE. And you can kind of provide maybe some little advice to the society on financial matters without getting involved in the running of the society at all, and yet still feel useful to SWE.

LK: Obviously SWE's finances and endowments have grown over the years.

CP: Uh-huh.

LK: Scholarships and--

CP: Yeah. We've been able to increase the income to headquarters from the Headquarters Fund. Thanks to generous donors and bequests and stuff, we've been able to increase the

scholarship endowments and grow the money to increase the stipends for scholarships, and hopefully manage the society's contingency reserve funds in a good way, as well as some of the other award funds. It's been an interesting challenge.

LK: Do you feel that as you look back on your career there's anything that you might have done differently?

CP: I'm not really sure if there is anything I would have done differently. I can look back and think there were some experiences I would rather not have had, like getting fired. But I think back, and that is probably, in hindsight, something very good that happened to me, because it made me stop and think, what did I really want to do? You know, you sort of get on the track of what you think you wanted to do, and sometimes you don't stop and take stock and said, "But what is it I want to do now, and the future?"

And so even those negative experiences, the few discrimination situations and problems turned out to have some positive impact down the road. You didn't know it at the time. But it's kind of like you don't know when a teacher influences you. You don't realize it for years later. And I think maybe students and other young SWE members that I've influenced, you don't realize it until years later and one of them says to you, "I remember you from that convention. It was my first convention, and you said" -- and, "That made a difference to me when you said" -- whatever it was. And I think, "Oh! Maybe it was all

worthwhile," even though I thought at the time something was frustrating, but it really wasn't, when you look back on it.

LK: Did you have any role models during the time you were an engineer?

CP: Well, as I said, Alva Matthews was kind of a role model in the early days. And within Shell I had a couple of people who were like mentors, not necessarily role models, but mentors. And I think that's important.

LK: How were they mentors to you?

CP: Someone I could talk with kind of openly, and bounce ideas off of that would be encouraging, and not tell me what to do, but kind of help me think it through. The gentleman who had called me first to offer me a job at Shell was a kind of mentor.

LK: A mentor that you met through your professional association or--

CP: No, through training courses.

LK: Oh, that's right, okay.

CP: So you never -- to me, sometimes, you never quite know who's going to turn out to be a mentor, but it certainly could be within your professional organization.

LK: Do you think that there's a need for a SWE today?

CP: Yeah. I said when I was president that I thought someday SWE would put itself out of business, which got me all kinds of flack at the time.

(Laughter)

CP: "What do you mean, SWE go out of business?" I said, "Well, if everything out there is an equal playing field and women are accepted broadly, and all the things of SWE's goals are no longer important, career guidance and stuff, then why should we continue to exist?" But unfortunately, I'm not sure we're there yet. People are still -- the problems are different, things have shifted. People still have issues, people still need the support of each other, the networking, the encouragement of the students, trying to get -- you know, it seems in recent years the number of people studying engineering has dropped again. So there's still a need for SWE to be doing some kind of guidance work at the real low level -- young levels to get people interested and begin to think about engineering.

LK: How -- or maybe the question is, can SWE do that in a way that's different from how other organizations out there that continue to be founded or that have been founded in the last few years? I mean, it seems like there are a lot of organizations doing that today. Is there something unique that SWE has to offer?

CP: Well, I think in terms of making it visible to young women and to young men, that women in engineering related professions is very doable, fun, good future. And I think sometimes we forget about the fun part of it, that your career should be something you enjoy doing.

I can remember my mother saying that her concern when I went

to college -- because she'd had to go back to work with no education, and couldn't get anything but a menial job -- was that she wanted me to get a college education in something I could earn a living at, a decent living at. She didn't care what it was. And she didn't really understand much about engineering. But when I said it paid well, (Laughs) you know...

But I think that to really make it clear to people that you need to find a career, and it can be engineering if your talents lie in math and science, but it should also be fun and fulfilling to you, not just a job where you make some money and that kind of thing. And I think too often people go off in directions where they've got a job and the living, but they're not really enjoying it. And then I think you lose a lot. And I think SWE can help to show to young women and young men that engineering, for many of them, can be that career, that it's so varied, that you can make -- I mean, there's so many jobs that people started out with in engineering, that are doing something totally different now, because their interests have taken them off on a different path. But that engineering education has prepared them to do all these different kinds of things.

And I think we still need to sell that. And I think SWE is one of the best ways to do that. And in some cases it can be done in conjunction with the Girl Scouts, in conjunction with the other engineering societies. We don't always have to do it just as SWE, but share and leverage and do things with others.

LK: Do you think that the public understands what an engineer does or who an engineer is in our society?

CP: No. I think they'd probably say, "Yeah, engineers build bridges, they build highways," you know. But I'm not sure that -- one of my fellow classmates at Pratt ended up working for Avon designing packaging. And people said, "Why do you need an engineer designing packaging?" You know, all the fancy Avon bottles and everything else have to withstand heat in a warehouse, they have to withstand pressure. They have to handle all that extreme cold in shipment and be able to be manipulated by people and not burst open, and all that kind of stuff. And that takes an engineer. So here's a common everyday product, and people never really understand that it took an engineer to make that product. It took a designer to come up with the concept, but it took an engineer to come up with the final product.

And if you think about it, there's nothing in your house that didn't have an engineer involved in it somewhere. Whether it's the flooring, the carpeting, in your house, the refrigerator, the sofa, there's an engineer involved in the factory design or development or product development, somewhere.

LK: As an engineer, how does that make you feel?

(Laughter)

CP: Well, it just shows the diversity of engineering.

There were three of us that all graduated, women engineers, with the same degree from Pratt, for example. And I ended up

doing health and safety, the other girl ended up doing packaging engineering, and the other gal ended up -- I can't remember exactly what it was, but something within the automotive area, and then worked for Dupont for a while. So three very different careers with the same basic education, in three different parts of the country, and that's just three people. And so I think that's the neat thing about engineering, is it can open up so many different doors for you over time.

LK: Do you have any final thoughts?

CP: Well, it's been a fun career, still is a fun career. (Laughs) I'm not totally retired. I still enjoy supporting SWE and helping it grow. It frustrates me some days, but...

LK: What doesn't?

CP: And as I say, I continue to be involved in my industrial hygiene professional organizations. And in fact, I had an opportunity to go to the British conference in April to see how they were doing things over there. And even though I'm no longer working full time in the field, it's a great way to keep up with what's going on in a profession; I keep my network and contacts up. So it's been fun, and I hope it continues to be fun.

LK: Well, great. Well, I want to thank you very much.

CP: You're welcome.

END OF INTERVIEW