AMERICAN SOCIETY FOR THERAPEUTIC RADIOLOGY AND ONCOLOGY

Interview with Dr. William Moss

January 12, 2004

[START TAPE 1]

MALE VOICE: All right. Let me do something, here. Just do this. [Clapping] There you are. That's all I'm looking for, is the clap. We're ready to go, gentlemen.

DR.COLMAN: Okay. Well, today is January the 12, 2004. My name is Martin Colman, and with me today is Dr. Kenneth Stevens. We are very happy to be here today with Dr. William Moss, as part of the oral history project of the ASTRO History Committee, and I hope, now, that we are going to have Dr. Moss doing most of the talking, so Dr. Moss, tell us what attracted you to radiation oncology in the very first place. How did you get into the field?

DR. MOSS: I had rotated to the Missouri State Cancer Hospital from Washington University (St Louis, Missouri) when I was a senior medical student on an elective. While I was a student, on that service, I met Dr. Juan del Regato. He was just about the best teacher I had ever seen. I began to think about radiation oncology at that time. I hadn't made up my mind however. I then had an internship in straight surgery at Barnes Hospital and I had a residency at the Ellis Fischel State Cancer Hospital in straight surgery. During that time, I came in contact with Dr. del Regato again, and near the end of that service, he asked me if I was interested in radiation oncology. I said I was. When I got out of military service two years later, he offered me a training slot.

DR. COLMAN: Well, now, you're mentioning Dr. del Regato's influence on you early on. I noticed in your CV that you also wrote a paper with Dr. Lauren Ackerman in 1946. Can you tell us a little bit about that paper?

DR. MOSS: While I was there, Dr. Ackerman pointed out that plasma cell myeloma very often behaved like a leukemia, in that the plasma cells developed a high count in the circulating blood. This had been known in the German literature as "plasma cell leukemia." So he suggested that I review all case histories at the Missouri State Cancer Hospital that had multiple myeloma, and had high circulating plasma cell counts. That's what I did. I think many people debate whether or not there really is a plasma cell leukemia. My paper drew some attention to it. My paper was published the first year that the journal *Blood* was published. It was in Volume I.

DR. COLMAN: So very early in your career, you came into direct contact with two of the giants of radiation oncology and surgical pathology. Can you give us some perspective on the sort of influence they had on you at that point?

DR. MOSS: They had a tremendous influence. They were both wonderfully pleasant physicians. They would just give you any amount of their time. Students loved them. Ackerman would have dinners at his home, where the students would go along with staff, and the interaction there was just about the best you can imagine. del Regato was always available. We had lunch with him every day. At the lunch table he had tales to tell about his training and his boyhood. There was a marvelous interaction with those people.

DR. COLMAN: Well, talking about boyhood, why don't you also tell us a little bit about your background before you got into medical school and radiation oncology? Tell us a little bit about where you grew up, and—?

DR. MOSS: I was born in Ardmore, South Dakota. My father died when I was three and a half years old.My mother took the six of us to live in a small town in South Carolina called Rock Hill, a mill town. She moved there because her sister lived there, and that's where I grew up. When time came to go to college, I had several friendswho were going to The Citadel. I was caught up in their enthusiasm, and I went to The Citadel. It was a military school, very strict. In high school I made a good grade in physics. When I got to The Citadel, I took an extra course or two in physics, and a couple of advanced mathematic courses. The first thing I knew, I was majoring in physics and I graduated with a degree in physics. I had the opportunity to take graduate work at the University of North Carolina in physics. However, about that time, I was told I could go to med school, so that's when I switched. My mother had remarried, and lived in Missouri. I went to Missouri, and took the necessary biological courses to get into med school, then applied for and was accepted at the University of Missouri Medical School. It offered only the first two years at that time. So, after two years I transferred to Washington University, in St. Louis.

DR. COLMAN: Tell us about Washington University at the time you were there, in the 1940s.

DR. MOSS: Washington University is a very, very good school, and it had, I thought, very superior professors of medicine and professors of surgery. Evarts Graham was a chief of surgery there. He was the first surgeon to take out a lung for cancer and have the patient survive. He was available; when I went to apply for an internship, he said, "Moss, we want you." I felt like it was the greatest thing that ever happened to me. He was gracious my whole year as an intern there in straight surgery. I was happy there, but I thought I didn't get the opportunity to do the surgery that I was capable of, so I applied for and was accepted as an assistant resident in straight surgery at of the Missouri State Cancer Hospital. I knew the people there and they accepted me. I've told you already that near the end of my year of surgery there I had an opportunity to go into radiation oncology.

DR. KEN STEVENS: You also went into the Navy? Was that after the—?

DR. MOSS: No, I went into the Army, Air Force.

DR. STEVENS: I mean Air Force. Okay.

DR. MOSS: At that time, the Army had an Air Force, and the Navy had an Air Force. I don't know how I got into the Army Air Force. I did not apply. They took me and put me there. That was a strange experience. I had to go to Fort George Wright in Spokane, Washington, for indoctrination. There were a bunch of physicians there just like me. I think there were eight of us in that group. The chief of the base called us in, and said, "Okay. I've got eight pieces of paper in my hat. Draw a piece." I drew Guam, and that's where I spent two years, on Guam, in the hospital part time, and in the dispensary part time.

DR. STEVENS: You have a funny story about arriving in Guam. What happened those first three days?

DR. MOSS: A typhoon had occurred a day or so before I arrived. I don't know if that's what you're talking about, but the Quonsets were knocked up on side, and the pre-fabs were distributed around in strange places. I had a hard time finding a place to sleep, but they put me near the hospital, and that's where I worked at first.

DR. COLMAN: So you spent how many years in the military?

DR. MOSS: Two.

DR. COLMAN: Two. And then, what happened after that?

DR. MOSS: Well, del Regato had offered me the residency in radiation oncology, and so, I went back to the Missouri State Cancer Hospital for that training. During that period of time, he didn't have a good physics course there, so he said, "You go to New York, and take Dr. Quimby's course in physics." She had written a little book on physics that was like the Bible in physics. I took her course at Columbia University. It was in the wintertime, and cold as all get out, but it was a good course.

DR. COLMAN: How long did it last for?

DR. MOSS: Six weeks.

DR. COLMAN: Uh-huh.

DR. MOSS: Of course, I had had a degree in physics, so I knew most everything she said, but she organized it well. It made sense. It was a big help.

DR. COLMAN: Yeah. Tell us about Quimby.

DR. MOSS: Quimby was—I think she must have been sixty —at that time. She was a very gracious person, an extremely knowledgeable person. On the boards, radiology boards, she was very strict. Everybody was scared to death that they were going to get Quimby. I had her on the board exam. She recognized me from her course and was very gracious to me. Maybe that's part of the reason I passed. I don't know.

DR. COLMAN: I'm sure there were other reasons. And tell us about the status of radiation oncology as a medical specialty, say, during your residency and early years in the field.

DR. MOSS: You know, most of the radiation oncology was done by people who were in general radiology. They had had one year of training in radiation oncology, and they did the best they could. They would do diagnostic in the morning, and go down after lunch and do radiation therapy. It certainly was —- it was ok for the time that it was done, but comparatively, it was a very limited service and that was that. They were limited by the equipment. The equipment was all ortho voltage. Their care was limited by the physics. They didn't have any proper physics. They didn't have any dosimetrists. They had a technician that helped them, that

knew how to raise and lower the machine, but that was about it.

DR. STEVENS: What was the economics of radiation oncology, radiation therapy?

DR. MOSS: Well I was told when I planned to go into radiation oncology—first off, "You can't make a living," and they were judging by how much the radiologist made from that part of their service. Second, they said that there would be a cure for cancer very shortly. They predicted one within 10 years, and that I would be out of a job if I didn't have diagnostic radiology to carry me along. Physicians didn't go into radiation oncology alone at that time.

DR. STEVENS: And that was in the mid-forties?

DR. MOSS: That was in the late—yes. I would say 1946. I was in doubt about whether or not I was doing the right thing.

DR. COLMAN: Now, you applied yourself entirely to radiation oncology early in your career, did you?

DR. MOSS: Yes. I was the first resident in straight radiation oncology that del Regato had ever had. There were not very many people at that time who were in the three-year training program. Most of them took diagnostic training for two years and radiation oncology for one year.

DR. COLMAN: Uh-huh. And of the radiation oncology teachers at that time, like del Regato — how many of them were practicing radiation oncology full-time?

DR. MOSS: There were a few. There was Maurice Lenz. at Columbia, William Harris at Mount Sinai in New York, Simeon Cantril and Franz Buschke in Seattle and Gilbert Fletcher in Texes.They were scattered around. A number of them. But they had very different backgrounds. Most of them had general radiology, and one year in radiation oncology, and had migrated into doing straight radiation therapy.

DR. COLMAN: You know, your mention of radiation oncology not being a popular field to go into — I want to jump forward a little bit, because I remember early on, when I was in this country in the seventies, you did an analysis of why radiation oncology was an unpopular field. Do you remember that? You presented something about it in the seventies, I

believe, or maybe in the early — I think it was in the late seventies.

DR. MOSS: I don't remember that paper specifically.

DR. COLMAN: You gave a presentation, and I think you had a very significant effect on us turning things around. You told us that we needed to get up on the floors and see the patients, not bring them into the basement. Do you remember that?

DR. MOSS: "oh yes," that paper was titled, "Bringing Radiation Oncology out of the Closet."

DR. COLMAN: Uh-huh.

DR. MOSS: And I thought at the time — and I still do that the best way to promote the knowledge of radiation oncology was by the referring physician, and by teaching the medical students, and to get them some way or another onto the service. They can see that you are a real doctor, see you're taking care of patients and that your specialty is interesting. That was essentially the message of that paper.

DR. COLMAN: Well, at that time, if I remember correctly, you told us that radiation oncology was the second least popular specialty for medical students, behind psychiatry as the least popular.

DR. MOSS: I remember that.

DR. COLMAN: And you told us all these things that you felt we should do to turn it around, and I really date the turnaround, to where we are today, where radiation oncology is such an extremely popular specialty with med students. We have, you know, hundreds more applying than we can take into residency. I really feel that that was the sort of turnaround point, and we went up from there.

DR. MOSS: Well, I'm flattered that you think that paper had such a big effect.

DR. COLMAN: Well I thought—

DR. MOSS: I didn't realize that.

DR. COLMAN: I know it got me and many of my colleagues out of the basement, and we started going up on the floor, and seeing the patients, and I think that had a big effect.

Tell us about the equipment when you first got into the field. When you were a resident and early on, what sort of equipment were you working with? And tell us a little bit about how it evolved.

DR. MOSS: The equipment was all 250 KV, and maybe a 400 KV machine here and there with superficial beams for the skin cancers. There were a few megavoltage machines around — one in Seattle, and one in Boston; (a Van de Graaff generator.). They had several in Europe at the Royal Cancer Hospital and in two or three other hospitals. In fact, I think they had more in Great Britain than they had in all of the US. That was about it. You know, of course, we had radium. It might have been after my training thatthe telecobalt unit — the experimental unit, was at Oak Ridge. The Canadians put one in at — oh, I forget the name of that city that's right across from Detroit now.

DR. COLMAN: London, Ontario?

DR. MOSS: London. They put it in London, Ontario, and that was a marvel. Everybody flocked there to see it, and I think Frank Batley eventually went there to run that, but we got our cobalt in -— I suppose it was 1952 or '53.

DR. COLMAN: And that was at Chicago.

DR. MOSS: That was when I was in Chicago.

DR. COLMAN: Chicago? Northwestern?

DR. STEVENS: You also did training in Britain and France.

DR. MOSS: Dr. del Regato not only suggested I go to Dr. Quimby for physics. He suggested that I go to an institution where the radiation oncologists took care of patients in a broader sense, and it was for that reason that he suggested Dr. Paterson. Dr. Paterson had visited Washington University to give a talk. Dr. del Regato had heard the talk. He was impressed, and he suggested I go to Manchester, and take their nine-month course, which was given to the equivalent of residents. You know, physics, radiation biology and clinical skills. He also suggested that I go to Paris to spend six months with Dr. Baclesse. Paterson accepted me very warmly, and was a wonderful teacher, I thought. Awkward, but he was good. The physics there was absolutely superb. They had strange ideas sometimes though you can't argue about the sense of a lot

of it. I enjoyed my nine months there. Then, I went to Foundation Curie in Paris with Baclesse. I don't think he wanted me there. He would tell me in French — whenever there was an American visitor, "Take care of those Americans.I would have to show them around, and talk to them, because they didn't understand his French. I learned a heck of a lot there, and it was fractionating treatment of head and neck cancers primarily. You know, it was very long treatments. Part of that was necessary, because skin reactions were so severe with their equipment. I had studied French just for the purpose of going there, and I communicated with the patients. I enjoyed it.

DR. STEVENS: You did some translating of French literature into English.

DR. MOSS: While I was there, Lacassagne and Gricouroft wrote this marvelous small book, about the size of the *National Geographic*, on the radiation effects on normal tissue. I thought it was so good that I wanted to translate it, and make it available to trainees in this country. I spent about a year translating that thing, and I thought it was a good translation. I sent it to four publishers. They all turned it down. I'd determined later that they had turned it down because for a foreign publication, they have to give part of the royalties back to the original publisher. They get to keep the rest, and it's got to have huge sales before they make the money they want. It wasn't very long until the people at Los Alamos translated that book, got it published under the US publication service in some way or another, and made it available. I used it as a training tool. It was just wonderful, I think the best simple thing that's been written.

DR. COLMAN: Tell us about some of the other people you came into contact with in Manchester and in Paris during those years.

DR. MOSS: Well, you know, I met Eason, who later became chief at Christie Hospital.

DR. COLMAN: Christie?

DR. MOSS: Christie in Manchester. Bradenton and Batley…all those young guys that were in training, all of them sharp, good people. I corresponded with several of them for a long time. I corresponded with Batley until he died of carcinoma of the esophagus. They had different ideas. They practiced different, but you know, you can't fault them. They added a

lot to our specialty. I also had a chance to visit in London, to the Middlesex, and the Royal Marsden hospitals. I spent two weeks at each of those places, and two weeks at the Radiumhammet and in Copenhagen radium center with Nielsen.

DR. COLMAN: Could you discuss a little bit the limitations of radiation oncology during the early days? I mean, what were your perspectives at that time?

DR. MOSS: Of course, the big headache was the skin reactions. Wherever I worked, we had a separate room where after the treatment, a nurse dressed the skin, and took care of skin reactions. Sometimes, they got infected, and that impaired the treatment. It was a shame that we had to put up with that so long. When megavoltage came along, that was seldom a problem. We didn't have good gadgets for localizing the cancer. No CT, no MRI. Very rare that you could get a laminogram to show the tumor volume that you had to treat. So much of it was guesswork, and even when you take port films, and look at them. Often you didn't know where the margins of the cancer were. You knew where the bony landmarks were but that's about the best you could do.

DR. COLMAN: Uh-huh. When did you first start taking port films?

DR. MOSS: I took them from the very start, much to del Regato's objection. He thought you didn't need them, and I would stick a film in there, and take it. I thought they were incredibly useful even when you didn't have an outline of the tumor, like on CT or MRI.

DR. COLMAN: So you were doing that with a therapy beam?

DR. MOSS: Yes. And the therapy beam was orthovoltage beams it's not a good film, but you can see the bony landmarks.

DR. COLMAN: Dr. Stevens pointed out to me that you had a paper in 1947 describing the association of adenocarcinoma of the endometrium with reference to obesity, diabetes and hypertension. Can you tell us a little bit about how you came to write that so early?

DR. MOSS: At the Missouri State Cancer Hospital, most patients that had carcinoma of the corpus, the endometrium, would be these obese women. There was an association of diabetes, hypertension and obesity. It's now well known. Many of these patients had diabetes and that impaired their surgery

- their ability to withstand surgery. One day, del Regato made some remark, kind of flippant, about this, and we got into a conversation. He said, "Well, why don't you look at it?" So I think there were 21 patients in that paper. I'm not quite sure. I weighed them, I studied the method of describing body build, I took measurements of their body, and determined which of the categories of body build they fit into. A huge majority fit into this typical body build. I don't know why carcinoma of the endometrium is so common in these hypertensive, obese diabetic women, but the triad is obvious.

DR. STEVENS: I think that was the first time that that was reported.

DR. COLMAN: In looking back over your professional career—what was the disease that you feel radiation has had a most significant role in during your professional career?

DR. MOSS: You know, there are a couple of areas, but cancers of the head and neck, of course, are very important because of our ability to spare the larynx and the ability to spare the oral cavity's walls, so a person could swallow and talk properly. That whole area has been so important in our specialty. In addition, carcinoma of the cervix, which, as you know, you can give a high dose with your intercavitary. You can give a big central dose, and then enough to take care of the lesser node involvement. So in those two areas, radiation oncology had a huge amount to offer.

DR. COLMAN: Where do you think you've had the most significant impact in management of cancer with radiation therapy?

DR. MOSS: In that book.["Therapeutic Radiology"]

DR. COLMAN: In that book? That book was — tell us about the book from the very first edition to the current edition. Tell us a little bit about it.

DR. MOSS: After being so terribly disappointed that they didn't publish my translation of the French book, I said, "I will do my own," and so, I started, and I didn't know how to write a book. Ackerman was edging me on: "Go ahead and do it, Bill." And so, I started. I wrote the chapter on breast, because I thought that would be a good test. If I could do that, I could do it, because breast was so controversial. So II wrote the breast chapter. I sent it to Ackerman, and he was so enthusiastic. He encouraged me.

That's what it took. And I would go home each night at the kitchen table, and spread out my papers, and my children saw that I was keyed up about this. They would always talk. One day, I was going to end it. I sat down, and one of them said, "Dad, did you see any good cancers today?" I thought a minute, and I said, "There are no good cancers." And the other twin spoke up and said, "Yes, there is. If a cancer kills an evil man, it's a good cancer." And then, the other one said, "Well, how evil do you have to be to make a cancer good?"

Well, those kinds of things went on at my kitchen table, but they never got published, so anyway, I'll tell you what. A story — I was riding to and from my home on the elevated train, and I had a folder with a chapter on cancer of the cervix, and I put it under my arm like this, and I was standing while holding on to a pole, the vertical pole, on the elevated. The train ran into the back end of another train. I thought we were going off the trestle. Well, the pole I was clinging to came down, and I landed on a stack of people, and people landed on me,The chapter on the cervix flew all over the whole car, and everybody rushed off, and I rushed off onto the platform where the train was, and then, I remembered the chapter of the cervix, and I went back in there to get it. It was nighttime. It was dark. I got down on my hands and knees, and I was getting this chapter together, and the guy came in with a flashlight: "What are you doing down there, fellow?" I said, "I'm getting the chapter of the cervix." And he thought I was knocked out, and he took me to the medical emergency people. They were going to take me to the hospital, but they wouldn't let me get back on, and I had to rewrite that whole chapter.

DR. COLMAN: What year was the book ["Therapeutic Radiology"] written, the first edition?

DR. MOSS: It took me four years, and it came out in '59, so I started it in '55.

DR. COLMAN: And in '59, you were in Chicago?

DR. MOSS: Yeah.

DR. COLMAN: Uh-huh. So you wrote the book while you were in Chicago?

DR. MOSS: I wrote it while I was at —a ctually, I had gone from the Veterans' Hospital over to Wesley Hospital, and it was published while I was there.

DR. STEVENS: Uh-huh. So you were about 40 at the time? 40, 41?

DR. MOSS: Well, '59. That's close to 40, yeah.

DR. COLMAN: And the train was which train?

DR. MOSS: It was the Evanston — it was the elevated.

DR. COLMAN: Oh, the elevated, uh-huh. Tell us the reception when the book came out. What—?

DR. MOSS: I was worried, because I was sure somebody would blast the book, say it was written by a novice, and say it wasn't any good. Dr. Anna Hammon at the University of Chicago told me I was too young to write a book. It wasn't challenging, because it was so simple, but from the very start, I tried to make it simple, straightforward and clear. If it wasn't clear, I would go back and do it again, and again, until it was as clear as it could be. Most of the chapters, I did first as lectures.

DR. STEVENS: What was different about this book compared to the other books that were available?

DR. MOSS: Well, the radiation oncologist at Buffalo (Murphy) had written a book, but I didn't think it was tremendously appealing to the resident. Hedidn't discuss the effects of radiation on normal tissue. Dr. Portman, who was a very good general radiologist, wrote… well… He collected people to do a chapter here and there, and that book had some good chapters in it. I used it for my trainees. Windyer, from England, wrote a good book. Paterson's book. But they were all different. Paterson did all of his. I tried to be consistent here, and at the first of each chapter, I talked about the normal tissues that would be irradiated. I tried to be clear-cut on the indications, and the sequelae.

DR. STEVENS: I always thought that that was the genius of your book, was the fact that as we studied this—and I studied your second edition that came out in 1965— that we could learn about the effects of the radiation on normal tissues to understand the tolerance of the tissues, and then go into the effects of the radiation on the tumor and the techniques of it, and to me, that was genius to do that.

DR. MOSS: That's what you have to know, and I was happy to see that in the eighth edition, which Cox published recently, maintained that relationship of putting at the very first, the effects of radiation on the normal tissue that would be encompassed.

DR. COLMAN: Well, the other area that I would like to lead into is training of radiation oncologists in the United States particularly, and the impact you've had on that. Can you tell us a little bit about that?

DR. MOSS: I'm not sure how much effect I had, but the book definitely had an effect on training. Many people came up and told me, even on the boards when I was an examiner, they were eager to tell me that they had studied my book. I would like to think that the book had some benefit for those trainees, and if it did, that's great. It was written for them. It was written for the residents, specifically. I think many of the residents found it very, very useful.

DR. STEVENS: You had a story about a resident from Chicago that went up to Wisconsin or Michigan, and then came back about 10 years later. That's, I think, a good story.

DR. MOSS: That was — I can't recall his name, now, but he was an eager resident, and he picked up as much as he could. I'm sure he was doing diagnostic as well, when he came back to visit, he went around to see how we were doing things. He said, "You're doing it all differently." And I said, "Well, aren't you doing it differently?" And he said, "No, I'm doing it just like you taught me."

DR. STEVENS: This was 10 years later?

DR. MOSS: It was about 10 years later, and it was a disappointment to see that I had not instilled in him the need for constant upgrading of patient care.

DR. COLMAN: The evolution to straight therapy from the people who were dual trained occurred during your early career and your involvement with the boards, I think, didn't it?

DR. MOSS: That was a slow change made by the boards that was translated into how you taught the residents. In 1974, the boards made a major decision that you had to take either diagnosis, or take radiation oncology on the exam. You could not take both unless you had trained a full three years in radiation oncology, and then three or four years

in diagnostic. It was highly unlikely that you would do that, and then take both exams the same time—day, or the same period. It's conceivable, I suppose you could do it sequentially, but it would not make much sense, and that effectively separated diagnostic radiology from radiation oncology forever, as far as I'm concerned.

DR. COLMAN: Was that a battle? Because, I mean, I know — I came to the United States in 1971 from a country where there had been separate training for 20 years, and I was really shocked to find people doing both, you know, and people doing, say, radiation oncology for as short a period as nine months, and so, I wondered, you know, looking back on it now, what was the sort of—how did you get that change effected? I mean—?

DR. MOSS: Well, there were so many inconsistencies in the training program. You see, a general radiologist could take two years of diagnostic training, and one year of radiation oncology, and he might flunk diagnostic on the boards, and then, he would get a certificate in radiation oncology, and when that was on the wall, you could not tell it from mine.

DR. COLMAN: Uh-huh.

DR. MOSS: He'd had one year, and I'd had three-plus, and so, that was a terribly inconsistent thing. They might give you a certificate saying you were trained in radium therapy if you passed the radium questions. All of those things had to be discussed, and thought out on the boards. I think it remained strange for several years until they realized that diagnostic was getting to be a full-time job, and radiation oncology was a full-time job. That's when, in 1974, they changed it. That was the year that I came to Portland, and I left the boards one day early, because I had to get to Portland. They made the decision before I left, but I didn't remain to sign the written change. It had to be a unanimous decision on the Board, and I was en route to Portland when they wanted me to sign the change, so they were trying to get in touch with of me at various places.

DR. COLMAN: Who were those radiation oncologists?

DR. STEVENS: Was it the Highway Patrol that finally caught up with you, or—?

DR. MOSS: No; that's what they said, but they never did that.

DR. STEVENS: Okay.

DR. MOSS: I signed it after I got to Portland.

DR. COLMAN: Who were the radiation oncologists involved with the Board at that time, in 1974, apart from yourself?

DR. MOSS: Don Childs from Mayo Clinic, — Nora Tapley, Bob Parker, and Luther Brady….

DR. STEVENS: You were on the Board for 20 or 30 years?

DR. MOSS: No, no. You are only eligible for two terms of six years each.

DR. STEVENS: I thought you had a lot of involvement—

DR. MOSS: Oh, I had a lot of involvement as an examiner on the examination committee.

DR. STEVENS: But at least on the examination—

DR. MOSS: Working with the written for years.

DR. STEVENS: On the examination committee, you were monitor to—

DR. MOSS: I was chairman of the written exam committee for quite awhile and I was an examiner for many years.

DR. COLMAN: So apart from that straight — the change to straight radiation oncology training, what are the other significant changes that you've seen in training programs over your career?

DR. MOSS: Of course, the big changes were in equipment, the ability to localize the tumor, to define the tumor with CT and MRI, the whole megavoltage availability, the computer availability. These things have just changed all of the practice. It's nothing like what it was. And I think, of course, the professional relationship of the radiation oncologists to the rest of the staff is entirely different. The staff of the medical oncologists, surgical oncologists and radiation oncologists form a group that treats the patient with cancer. You are recognized as one of those three, in the tumor boards. You're a member of the team. I don't think that was the case at all back when I was starting my training.

DR. COLMAN: Uh-huh. I wanted to ask you another question relating to port films. When you started taking port films against Dr. del Regato's advice, do you know of other people who were doing it at that time?

DR. MOSS: I had heard of it, and that's why I started doing it. I had a technologist who had been in diagnostic radiology and he knew enough to do it properly, or to do the film part of it properly. He was in that situation where he knew how to do it, and I wanted to do it, so we just did it. It wasn't that del Regato said, "Don't do it." del Regato just said, "That's a waste of time," but he didn't realize how often he was missing the tumor.

DR. COLMAN: When did simulators come in as a sort of a—?

DR. MOSS: The first simulator I ever saw was one that Simon Kramer had at the Middlesex. They had them in Manchester, but they used a portable diagnostic machine, and they did not duplicate the treatment beam precisely, because they could not get the treatment distance. You couldn't always get the field you wanted. The patient was down against that end of it. The first one I knew of was made by Picker. It was like the one that we had here in Portland and designed by Simon Kramer.

DR. COLMAN: Uh-huh. And what year was that, approximately?

DR. MOSS: I don't know. I think it was probably in the late sixties or early seventies. DR. COLMAN: You worked or trained at some of the most significant oncology institutions in the country and in the world at that time. Can you tell us a little bit — put into perspective the contribution to radiation oncology of the various institutions during your early career?

DR. MOSS: The Missouri State Cancer Hospital was a unique hospital. Everybody said it was a political mistake, the legislature donated money for cancer, because one of the legislators had died of cancer, or something, but it was a beautiful hospital. How they got del Regato and Ackerman there, I don't know, but some way or another, they coaxed those guys there. While I was on Guam, or before that, they were writing their magnificent book. I knew they were writing their book. By the way, while I was on Guam, I wrote to Mosby and said, "How much is it?" They wrote me back and said, you know, "It's so much." I sent them a check, and del Regato said I got the book before he did.

Anyway, they made that hospital well known, and since then, it's changed somewhat. It now is under the administration of the medical school at the University of Missouri, and I'm sure continues to do fine work, but the people have not sparked the imagination of the other people in the cancer world.

The hospital in Manchester was unique. Paterson was kind of an odd duck. They saw 6,000 cancer patients a year there, and they had to turn them out — they had to treat them, and they speeded things up, gave thema higher daily dose, sometimes a shorter total dose, and they had these methods of doing things — localization of treatments, you know, and it was all very planned, very, very planned. You didn't vary from their plans. For carcinoma of the cervix, you treated it, by George, by the plan. The radium — they systematized that for carcinoma of the cervix. That was very different from the Royal Marsden. They established their name based on that. In Paris, you would see Baclesse and the others of that staff made you think it was magic, as if nobody else could do it. I know that's not the case, but they wouldn't tell you specifics of their treatment. You would ask them questions about things and they wouldn't give you an answer. That's the way I felt. Maybe it was just me. All of those people were huge. Smithers, and Royal Marsden, and Windyer at the Middlesex, and each one of them contributed a huge amount. Everyone wrote a book of some kind. They had a huge influence on trainees.

DR. COLMAN: Tell us about the evolution of the radiation therapist as a profession, from the early nurses who were assisting the radiation oncologists to where we are today. How did that come about?

DR. MOSS: I'm not sure I know all that much about it, but the very early people who were using radium and X-rays came out pretty close to each other. The first machines were superficial, and it's sad that you could read this one doctor who was treating carcinoma of the breast with radiation. His beam had an "effective" depth of one centimeter, and he would treat a centimeter, necrose it, and then, he would treat the next centimeter, and necrose it, and then, he would treat the next. So it was like radiologists' Mohs treatment. And then, as x-ray machines's beams got more penetrating, they changed their method of treatment, but it went through this very painful evolution, where they did these terrible, terrible things. It gave

radiation therapy a bad name. It was from the time that the beam was discovered until maybe the early 1920s, that whole period contributed to a bad reputation for radiation treatment. And I think the radiation oncologists had to outlive that before they became a respected specialty area. The surgeons started irradiating patients. Everybody was doing radiation therapy in the beginning. They didn't know the depth dose, they didn't know the surface dose — they didn't know anything, hardly, about the beam, so they were bound to make mistakes. That's why I wrote that paper on the history of radiation therapy, "Stumbling Through Necrosis, and Cure." It was a matter of stumbling along.

DR. COLMAN: At what point did the training of technologists become formalized, to where you needed to have, sort of, radiation therapy technologists working with you?

DR. MOSS: The technologists or the radiologists?

DR. COLMAN: Yeah. The technologists.

DR. MOSS: The British set the pattern for that, as far as I'm concerned. They had good technologists, and they recognized that need way before we did. And they had excellent schools for them. And the technology training that the technicians had here was relatively limited. I can't recall what year — it was a gradual change, just like our evolution was a gradual change. I think, certainly, by the early seventies, they started having more formal training, and I'm not sure when they separated training from diagnostic.

DR. COLMAN: When you first started, when you were a resident and early in your professional career, were the people working with you nurses, or did they have some sort of training in therapy?

DR. MOSS: In Chicago, we had a nurse who became a technician overnight, and I would show her what to do. Eventually, she learned what we wanted to do. I accepted her into the business because she knew how to do dressings on the patients that needed dressings. She knew how to set a patient up for treatment and examination. She knew all of these things that we do, and she did more than just radiation technology.

DR. COLMAN: Uh-huh. Well, I see it's close to 10. Maybe we should take a five-minute break here, and then go on. In

the second hour, what I would like to ask you about is some of the — if you could talk about some of the personalities, and go into a little bit more detail — tell us some anecdotes about the people you knew, and maybe it will be a little bit more freewheeling, because we've covered most of the questions. There are a couple there that I want to hit in the second half, but—

[END TAPE 1]

[START TAPE 2]

DR. COLMAN: We're continuing the interview here with Dr. Moss, and by the way, I meant to say this at the beginning, but I really appreciate your making yourself available, and participating in this oral history series. It's really terrific, and I hope we can continue for about another hour or so, and tap your brain for other memories of radiation oncology, and the evolution of the specialty, and the history of radiation oncology in the US during your lifetime.

Why don't you start by giving us a chronology, starting from your residency onwards, of the positions you've held, and the people you've worked with in each of those places, and what made you move from one place to the next?

DR. MOSS: After my European tour, I took my boards and passed them. I was then made Director of the Department of Radiation Oncology — it was "Therapy" at that time — at the Missouri State Cancer Hospital. del Regato had accepted a position in Colorado Springs where they were to develop a radiation oncology center identical to the one in Missouri. This was with the wishes of Mrs. Penrose. I might just say that her husband had developed carcinoma of the esophagus. He wanted to get radiation treatment, so he bought a machine and put it in the basement of their home in Colorado Springs. He then hired Dr. Henry Coutard to come from Paris to Colorado Springs, to treat him in the basement every day. From that developed the Penrose Cancer Center. After he died, the machine was given to the local general hospital, and they had to construct a facility there which would care for cancer patients. Dr. Coutard moved over to the cancer center, and directed the treatment there.

DR. COLMAN: What was the machine?

DR. MOSS: A 400kv GE Machine.

DR. COLMAN: Hmm. Uh-huh.

DR. MOSS: General Electric. The department really didn't develop very much — I don't know why I'm giving you all of this.

DR. COLMAN: That's all right.

DR. MOSS: Mrs. Penrose came to Columbia, Missouri. I went to Jefferson City to meet the train, to bring her to the Missouri State Cancer Hospital. I drove her back there to the Cancer Hospital — while she was there, she was so enthusiastic that she wanted to build a facility in Colorado Springs exactly like the Missouri State Cancer Hospital. That's why she hired del Regato. She didn't hire him. The staff of the hospital did — but that's why he went there.

DR. COLMAN: Uh-huh. And he trained a lot of people there.

DR. MOSS: And trained a lot of people there—

DR. COLMAN: Uh-huh.

DR. MOSS: Anyway, I became Chief of Radiation Oncology at Missouri State Cancer Hospital after he left. I was there for something over a year. Dr. Hugh Wilson of Washington University — he was Chairman of Radiology then — came down and spent the day with me. It was on a day when we must have had 75 to 100 follow-ups: skin cancers, rectal, you know, everything. That was an unbelievable place, a show with all of those patients. There were such good spirits. It really impressed Hugh Wilson, and so, he hired me. I went to Washington University, and I think I was there, maybe, two and a half to three years. I argued for something similar to that at the Missouri State Cancer Hospital. I knew it couldn't be the same, but I wanted more autonomy and different equipment. That was very slow to develop, and in fact, none of it came about. We had a discussion, and it was essentially decided I would be better off if I left. So I left, and that's when I went to Chicago. That was a marvelous change for me. I went to the Veterans Administration Research Hospital and Northwestern University. They had a million-volt machine and quickly bought a Cobalt Unit.

DR. COLMAN: [Interposing] GE?

DR. MOSS: They had a big space there for a cobalt unit, or something else. We looked at everything, and decided to get a cobalt unit.

DR. COLMAN: And that was in 1953 that you moved there, right?

DR. MOSS: Yes. Michael Reese had its good equipment already, I think. That's when I did the research on the effects of radiation on the lungs, on dogs, and the effect of radiation on the small bowel in rats. I had a laboratory, and good space, and good help. The former chief of biochemistry at Northwestern was retired. He came over, and he helped me. Marvelous man, and wonderful help, because I didn't know a lot of things about the lab. I kind of migrated then from there over to across the street, to Wesley Hospital. I was still chief at the VA, and chief over there. I became a professor at Northwestern while I worked there.

DR. COLMAN: Was that on the north side of Chicago? Where was that at the time?

DR. MOSS: Yeah. That was right there at Northwestern.

DR. COLMAN: Uh-huh.

DR. MOSS: The department at Wesley Hospital was completely redone, and moved from the third floor down to the basement, in the new addition. That's when they got the cobalt unit, and some other pieces of new equipment, a simulator, and things of that sort. It was in 1972 when we got the computer, and that was a big day. Wesley Hospital was very, very good to me. I thought the staff treated me well. Radiation oncology became a separate specialty, essentially. At the medical schoolit was still under "radiology," but at the hospital, it was separate. I had a similar representation on the staff as any other department. There were two of us. Bill Brand came with me, and then we got another, Hoover.We got a fourth one, Jerry Beck. So we had a good staff. We also took care of the Children's Hospital radiation oncology and we took care of the Veterans and Passavant Hospitals. It was a good service. I was happy at Northwestern, and to tell you the truth, I had no intention of moving. A fellow that I rode down to work with every day lived in my town. We were both writing books. He was writing one on hematology oncology. I was writing one on the therapy of radiation oncology. We talked books. He took off and went to Mayo Clinic, and

stayed about two years, and then he came to Portland. His name was Jim Lindmin. He was Chief of Hematology Oncology. More hematology than oncology, by the way. And he wrote me a letter, saying, "We're looking for somebody at Portland to chair the department of radiation oncology. Could you give me some names?" Well, I gave him six names of — I might have put your name on it — six names of people who might be interested in becoming chief at Portland. Down at the end, I put a little P.S.; "This is as bad as ever, riding the train," and all that, and he picked up the phone, and called me, and said, "Bill, I hear a little bit of discontent," and I said, "Well, you know, the "L" is the same, and it's cold weather," or something. Anyway, he said, "Why don't you come out here and look at it?" And I said, "Oh" — well, anyway, eventually he persuaded me to, and you know, I liked it. Dr. Cliff Allen had a good radiation department. He was separate from diagnostic. I don't know how he did it, but he was separate from the — what's his name? And—

DR. STEVENS: Dotter?

DR. MOSS: Who?

DR. STEVENS: Charlie Dotter.

DR. MOSS: Charlie Dotter.

DR. STEVENS: If I could interject, here. The radiation oncology department, the radiation therapy department at Oregon, was actually the first separate radiation oncology department in a medical school, in the whole United States.

DR. COLMAN: Really?

DR. STEVENS: Back in January 1967.

DR. MOSS: And I understand this decision was made on the golf course between Dr. Allen and Dean Holman. I don't know if that's true or not, but in any case, it was separate. That's what made it so appealing, and thank goodness it's remained that way. He had a good department. The relationship with the physicians in the med school seemed, to me, to be good, so I was glad to come to Oregon. And it's been a wonderful, wonderful experience. So that's the history of my moving.

DR. STEVENS: Uh-huh. You've had some patients who become famous because they wrote books, and movies have been made out of them, out of those books.

DR. MOSS: I think many, many patients who get cancer therapy (it's such a terrible experience, and they are so involved in it), they want to write a book to tell people about their experience, and that's why I'm quite sure that these two people that Ken mentioned wrote books. One of them developed carcinoma of the true vocal cord, a very easily curable cancer. I treated him, unfortunately, like a doctor. He was a doctor. He then wrote a book called, *A Taste of My Own Medicine*. It reflected on how he was treated by his physicians that were caring for him. The story he developed was imaginary, but I feel certain his sense of how he was treated was real.Reflecting back on it, I can't recall whether or not I treated him like a non-M.D. patient or not, but he was a physician — a pretty prominent physician. He was sort of intimidating to me. I examined his larynx, I told him what we were going to do, and we did it. But he wanted more than that. I think he wanted some — more intensive attention and care, and that's why he wrote his book. It's a good book that many physicians could profit by reading.

DR. COLMAN: And it was made into a movie.

DR. MOSS: It was made into a movie called *The Doctor*, and in that movie, I think the characters were an exaggeration of the real thing. Maybe that was beneficial, too. I was pictured as a foreigner who couldn't understand English, and who was sort of cold. I don't know if that was me or not. That's the way I felt about it.

DR. COLMAN: Now, the doctor who you treated — what was his field?

DR. MOSS: I don't recall. But—

DR. STEVENS: Internal medicine, I think.

DR. MOSS: Okay. The other book was written by a girl who had been at Haight-Ashbury in San Francisco. She had retained many of her ways. She wore old-fashioned dresses, and was a free spirit, you might say. She came in with her son, who found out where the coffee room was, and every day, he would rush in there, get a cookie,and stuff his mouth and pockets with cookies. She would come in each day with a

little spiral notebook, and write a little message about me, or Ken, or somebody, and show it to me, and say, "Look at that," I would compliment her. One day, she came in and said that a publisher was sending her a big check. That changed my view. Suddenly, I became very curious, and sure enough, her book called, *Walking Through the Fire*, was published and had wide circulation.

DR. COLMAN: Uh-huh.

DR. MOSS: And she did walk through the fire. After all, she was pregnant. She had advanced Hodgkin's disease with a huge medistimal mass. Her husband left her. She could not have had a worse combination of ailments, of things, and she pulled through. That's why she titled her book, *Walking Through the Fire*.

DR. STEVENS: That was made into a movie.

DR. MOSS: That was made into a TV movie, and I have seen her off and on since then. She's done extremely well. She's living and happy with her child that was born shortly after we treated her mass, which was cutting off her breathing, compromising her esophagus and heart. She was in serious trouble. They did not think they could pull her through the delivery. I've had other interesting characters. I've treated a gangster from Chicago. I've treated, the chief of the Mafia, and I can still recall the day he came in with this young man. After I put the guy in for treatment, the young man came out and said, "Do you know who that is?" I said, "No, I don't know who it is." He said, "He's the chief of the Mafia." And at that time, he kind of flapped his coat open, and I could see his little pistol there in his jacket. I said, "He'll get good care." Well, he had carcinoma of the lung, and he improved he said, you know, "All I want to do is to attend my daughter's marriage. Just get me to that." He lived to attend his daughter's marriage. Then, he came back a few months later and said "She's pregnant. All I want you to do is to let me see my grandchild." He didn't make it, but I realize this kind of bargaining is common with cancer patients. Kübler-Ross actually says that's good, because the patients eat better, their spirits are better, they have hope. Something to look forward to.

DR. STEVENS: You have talked about some of the situations in Chicago where there were some — there was a wealthy family,

and then, they got radium treatments, or special things that only they could afford?

DR. MOSS: This is one of the — I think was the Swift meat supplying people. In any case, there was one of the big, prominent meat suppliers, and during the early years — and this is probably about 1910, there was a notion that intravenous radium was good for you. It was actually sold it in ampules, and injected it into people, and that family, members of that Chicago family partook of that. We saw the results of that. They developed horrible cancers of the bone. The AEC, particularly the place outside of Chicago, there, the radiobiology laboratory—

DR. COLMAN: Argonne.

DR. MOSS: Argonne. They became especially interested in these people because of their radioactivity, and the long-term effects of radiation on people.

DR. COLMAN: Who was doing that work, do you remember?

DR. MOSS: I don't remember who was leading that but they wanted to study these tumors, and they wanted to do postmortum to study their bones.

DR. COLMAN: Tell us about some of the other people in Chicago during the nearly 20 years that you were there at the other institutions. Oldman [phonetic]? Did you know him?

DR. MOSS: I knew his name. I didn't know him too well.

DR. COLMAN: Uh-huh. And the people at the University of Chicago?

DR. MOSS: Well, I knew Mel Griem, and of the people before him. Jim Carpenter… Jim and I were good friends. He was a strange person in some ways. One day he — he had moved to the East. He called me up frequently. One day he called and said, "Bill, I've got this patient I want to tell you about." And then, he described this patient with a cancer in the oral cavity. Maybe tonsil, and maybe base of the tongue. And I said, "Well, Jim, I don't know whether you're doing him any good, or not." And he finally said, "That patient is me." then, I thought I had to changewhat I said, and I tried to give him some hope. I'd already said the wrong thing. He died shortly thereafter. But it was a painful death. I really felt for him. Jim was such a wonderful fellow.

DR. COLMAN: Did you have any involvement with the people at Argonne?

DR. MOSS: I knew a guy named Pratt. I don't know what Pratt did, but he came to our hospital off and on to see me and I established that contact. Any time I wanted anything, I would call Pratt. I don't know if he's still living or not. I want to say Harvey Pratt. Later I was very much aware of the treatment equipment they developed.

DR. COLMAN: Uh-huh. Yeah.

DR. STEVENS: When you came to Oregon, I know there was some concern about the finances, and I remember you were talking to the dean about being able to bill patients for radiation therapy?

DR. MOSS: That's unbelievable. I had been billing patients — Medicare, billing their Medicare for treatment in Chicago for a number of years. You know, Medicare came on in 1964, for 10 years, I was billing patients for their care. Well, I came to Portland, and we started billing Medicare, and the dean — I don't remember why I was in the dean's office — and I said, "Well, you know, we have the income from Medicare." And he said, "What?" And I said, "Well, we're billing Medicare for their radiation treatment." He said, "You can't do that." And I said, "I've been doing it for years, and they pay us." He did not realize that Medicare would reimburse the radiation oncologists, and I don't know if Dr. Clifford Allen was not billing them, or just if the dean didn't know that. But it was remarkable that the dean of the med school in 1974 didn't realize that Medicare would reimburse for radiation treatments.

DR. STEVENS: What impact did Medicare have on radiation oncology, radiation therapy?

DR. MOSS: I think if there had not been Medicare, there would not have been radiation oncology. It's almost that important, because a significant portion of the income at that time came from Medicare, and that was one of the reasons that radiation oncology was able to separate and survive.

DR. STEVENS: Uh-huh. What happened before Medicare?

DR. MOSS: Well, you know, you were charging five dollars a treatment.

DR. STEVENS: And did the patients have the money to pay for it?

DR. MOSS: A lot of patients didn't have even that much, but many of them were paying. At Wesley Hospital, we had very few patients that didn't pay. I think the maximum treatment went up to seven dollars before Medicare came along. It's kind of a pathetic thing.

DR. STEVENS: How much did it cost? I mean, was that—was seven dollars how much it cost to do it, or seven dollars—?

DR. MOSS: That was kind of the fee set by the medical administrator.

DR. STEVENS: Was it a money-losing thing, or was it a—?

DR. MOSS: They gave me a salary in addition to that, soI made ends meet. Let's put it that way.

DR. COLMAN: I noticed one of the papers you wrote in 1962 was with Dr. Thomas Starzl on canine liver transplants. Can you tell us a little bit about him, since he was a significant—?

DR. MOSS: Starzl was an innovating guy. He came to Northwestern, and was immediately a success because of his research on organ transplantation. He had a bunch of dogs in the dog house in the hospital, and was doing organ transplantation on the dogs. We had treated some of the dogs before they got the transplanted organ. We had treated some of the dogs after their organs were taken out, and transplanted. In a dog, it didn't seem to make much difference, and they were thinking about doing that in humans. I was doing research on the dog's lung, and the affect radiation had on oxygen diffusion in the lung with a guy named Dr. Haddy. Haddy has since become a very famous pulmonary physiologist. I was lucky that he was there to help me, but I had two or three dogs in which we had irradiated the chest. They had epilated their fur on the chest, and they were in the dog room. Well, Starzl had an emergency with one of his dogs and it had to have blood. He saw my dog there, and he just took the dog out, and drew enough blood to give a transfusion to his dog. my dog died, and this was a dog that I had irradiated 14 months before. He was a very valuable — because I had done serial pulmonary functions on this dog. I told Loyall Davis — the chief of surgery. I said, "Starzl killed my dog." And he

said, "I'll take care of it, Bill." And Starzl left there, and went to Pennsylvania a couple of months later.

DR. COLMAN: So he took a transfusion without asking your permission from your dog?

DR. MOSS: Yes. It was a very valuable dog followed for 14 months.

DR. COLMAN: Yeah. Uh-huh.

DR. MOSS: So it had accumulated a lot of value about radiation induced lung fibrosis. DR. COLMAN: Uh-huh. Yeah.

DR. MOSS: Right after that, he tried to make amends, and that's how come we wrote that paper. He put my name on there. Well, good story.

DR. COLMAN: He put your name on as senior author.

DR. MOSS: No, not first author. Looking back on it, he was an energetic guy. Because he had all of this incredible energy, and he would even sleep in the dog room to take care of his dogs.

DR. COLMAN: Yeah.

DR. MOSS: He was so dedicated. You just don't see people like that. After he went to Pittsburgh, he became internationally famous, and he wrote that book about his experience

DR. COLMAN: Yeah. Looking back on the people who trained with you, who were the significant people?

DR. MOSS: I don't know. There's a flock of them in and around Chicago. Probably the one that helped me the most, and I had tremendous regard for, was Jack Maier. He was, if not my first, almost my first resident in Chicago. He wanted to practice radiation oncology full-time. He'd had one year of therapy training, and was with me for something over a year. He became chief at Walter Reed, and did some research on the atomic pile that they had there, on neutron therapy. I still think that that was what probably caused his death. He died of multiple myeloma. And he had been working with neutrons for three or four years. They had a hole in the pile where the neutrons were coming out. It wasn't proper shielding. But he had written a lot of really good papers

on carcinoma of the testicle and other things. I thought he was a super person.

DR. STEVENS: You had one resident in Oregon where you had a tie, because he wouldn't wear a tie?

DR. MOSS: Well, there have been a number of residents who have been individualists and wanted to do things their own way. I think you're talking about Hughes.

DR. STEVENS: Yeah.

DR. MOSS: Hughes liked to think of himself as a hunter, and a motorcyclist. He was that kind of guy. He broke his leg on the motorcycle. He had it in a cast, and he stuck it out while still riding on his motorcycle. He offered to take me hunting any number of times. I never went. He moved to Kalispel, Montana. I think he's still up there, isn't he?

DR. STEVENS: But you had a clip-on tie for him when he was in the clinic?

DR. MOSS: Yes. He wouldn't tie it. He would clip it on. Take it out of his pocket.

DR. STEVENS: You wanted your residents to look professional.

DR. COLMAN: Uh-huh. In looking to the future, what do you think are the things we should be thinking about in radiation oncology to improve the specialty, improve the profession?

DR. MOSS: Well, I think they've done a marvelous job in fashioning the programs as they are. I think the number of years required is good. If there's anything that I would like to see improved, I think it's the clinical care aspect. It's the—I don't want to say "compete" with the medical oncologists in clinical care, but the clinical oncologist gives therapy. He takes care of the patient in a clinical way, and I don't mean that we need to dominate the care of the patient, but we should be able to care for many things when they come along. I think if there's any place where a big step could be made, it's in that area. You know, we havegood physics in most places. Sure, there is a single machine here and there, and they don't have decent support, and maybe that should also be looked at, but I look at clinical care as one area that I would like to see improved. I don't think there would be any real advantage

in lengthening the training period. Physics support in most places is good. We should work towards getting the isolated facility more physics help.

DR. COLMAN: Do you think there's anything specific we should do about training programs? I mean, do you think apart from that aspect, we are improving clinical care?

DR. MOSS: I don't see anything that I would do. I think the number of years is sufficient. I think the requirements in physics and radiobiology should be scrutinized. When I finished examining at the Board, and that was a couple of years ago, I thought the trainees were good for the most part. Occasionally, you came across somebody who hadn't been properly trained, and he was required to do it over again. But that's about all you can do. The quality of training programs are a reflection of the quality of the Board exams.

DR. COLMAN: In looking back now, who would you say were the really significant figures in radiation oncology over your professional lifetime?

DR. MOSS: del Regato, Fletcher — those were two people who were outstanding. I mean, you look at del Regato's book, and what a big influence it had earlier. And Gilbert Fletcher, the stubborn man that he was, had a huge effect on the way radiation oncology was practiced. To some degree I would like to think that the people at Washington University — Carlos Perez, Purdyand Bill Powers — that group introduced the computer equipment that you could put your beams in and add them up, and get doses in the full field. I can remember when that machine came out from them, and everybody was hovering around, excited. Right after that, the computer became most desirable. We got one at Wesley Hospital before I left, and we all hovered around it, and worked with it, and the big spools of tape here and there. It was a very crude, but soon after that, the little machine — the EP 8 came out.

DR. COLMAN: The EP Eight. Yeah. We've got a group, by the way — we've got a group who are documenting the history of computers in radiation oncology, some of the physicists and people who work on—

DR. MOSS: I think Powers and Purdy are the ones that introduced their clinical usefulness. I'm not sure how much they really added to it, but they brought that thing to the

RSNA. It was moved from the RSNA to our hospital. That's when we got it. You'd asked regarding other people, and you can look at Cantril and Buschke back when they had their million-volt machine. They wrote the book on super voltage, and the effect that that had on everybody, trying to get one of those machines. That was the first book that really illustrated the superiority of it, as far as I was concerned.

DR. COLMAN: Uh-huh. There were a couple of people that I had read about in—that I wondered if you would comment on. One was Kaplan, Ira Kaplan, from New York. Did he have any sort of impact?

DR. MOSS: Well, Ira Kaplan wrote a book. I didn't think he contributed all that much to tell you the truth. You know, you could look at the Kaplan from Stanford, and what he did for Hodgkin's disease. Much of that was done by Gilbért of Switzerland.

DR. COLMAN: René Gilbért, from Switzerland.

DR. MOSS: Switzerland. And he did all of that but he didn't push it. And here, Kaplan came along and improved it and pushed it.

DR. COLMAN: Well, he also didn't have a megavoltage machine.

DR. MOSS: Yeah. That's true. But his idea of treating the next uninvolved area was all the same.

DR. COLMAN: Yeah.

DR. MOSS: And I felt sorry for him, because he was not given credit.

DR. COLMAN: What about Lampe? It seems to me that many of the eminent people—

DR. MOSS: Lampe was such a wonderful guy. He came to visit me when I was in Chicago, and I had made some little innovations in treating skin cancer, and I said, "Come here, Dr. Lampe; I want to show you this." He looked at it, and he said, "Bill, I've been doing that for 10 years." He was such a humble person, and so terribly knowledgeable. He wrote that little book, *Radiology for Medical Students*. Just a wonderful little book.

DR. COLMAN: Well, it seemed to me, you know, just from my experience in radiation oncology, Gilbert — sorry. Phil Ruben, Bob Parker, and Cy Levit all trained with him. I thought that was pretty significant.

DR. MOSS: And Bagshaw.

DR. COLMAN: And Bagshaw also? Really?

DR. MOSS: Yeah. He turned out some good people. He was on some committees with me, where he always had his pipe, and was very droll. He came up with the needed remark at just the right time.

DR. COLMAN: Yeah. And then Simon Kramer — you didn't mention him in Middlesex, but he seems to have had a very significant effect on the development of tumor staging.

DR. MOSS: You're right. I mentioned Simon and Lampe. Simon's Patterns of Care study is fabulous, because it made us look at ourselves. He did it in a very subtle way, and that was a very, very hard project to get departments, other departments, other people, to cooperate.

DR. COLMAN: Yeah. And it was groundbreaking in terms of looking at methods of treatment and outcomes.

DR. MOSS: You know, every specialty should have Patterns of Care study and then modify care according to what is found.

DR. COLMAN: Yeah. Yeah. Well, in closing, is there anything that you haven't touched on that you would like to mention?

DR. MOSS: I don't think so. You know, you have mentioned a contribution that the new equipment and diagnostic radiology has made to our specialty. That includes CT and MRI, PET scanning, and all of the things that have aided in tumor localization. If there is anything that has really sparked improvement in outcome, it's definition of tumor extent. You look at it, and wonder what you would do if you didn't have those things. Of course, they don't tell you where the microscopic nodes are. You should know that, but at the same time, they have really put tumor definition in an entirely different realm, I think. It's made treatment much more precise, and I think that's what we needed for a long time.

DR. STEVENS: Can I ask you a question?

DR. MOSS: Sure.

DR. STEVENS: Do you think that we're close to curing cancer?

DR. MOSS: There are some cancers that are quite curable, but if you mean all cancers, there are still a lot of problems. You can take the work of people like Dr. Drucker, and essentially control it, but in localized cancers of the oral cavity, and of the cervix, and you can pick out a whole group of them - they're really quite curable in their early stages. To change that, you're going to have to make earlier diagnosis, which is a real problem. I don't know how close they are to defining a fundamental cause of cancer and correcting that, if that's what you're talking about.

DR. STEVENS: That's — I'm leaving the definition up to you.

DR. MOSS: I don't think they're near that.

DR. COLMAN: Well, the birds are chirping, which is a signal that our session has come to an end, and Bill, I just want to thank you very much for participating in this oral history project. It's been a pleasure to—

DR. MOSS: Well, I hope I contributed something. I—

DR. COLMAN: Well, you have—

DR. MOSS: kind of rambled on here and there.

DR. COLMAN: Well, you've contributed significantly over a lifetime, and it's been wonderful to spend two hours with you today. Thank you very much.

DR. MOSS: Well, thank you.

DR. COLMAN: And Ken, thanks very much for participating.

DR. MOSS: Thank you, Ken.

DR. COLMAN: Good. Thank you.

MALE VOICE: Thank you. I was going to bring a still camera. Do you have a still camera?

DR. STEVENS: Do I have a still camera?

DR. COLMAN: Yes, I have a still — in fact, I brought it for that reason. In fact, I would like to take—

DR. MOSS: If you want a photograph, I just happen to have one.

DR. COLMAN: Good. Bill, do you know that this — the point you made about René Gilbért?

DR. MOSS: Yeah?

DR. COLMAN: When I did my residency—

DR. MOSS: That's when I was young.

DR. COLMAN: Thank you very much. That's great. Thank you. What year was this?

DR. MOSS: I don't know.

DR. COLMAN: This would have been about — I think it's in the seventies, isn't it?

DR. MOSS: It's probably in the late seventies.

DR. COLMAN: The late seventies, yeah.

[END TAPE 2]

BILL MOSS INTERVIEW, PART 2

Dr. Marquez: . . 1983 and you were still coming and teaching the residents, right?

Dr. Moss: I was coming, first half time and then one day we . . . half a day a week.

Dr. Colman: What year did you retire when Ken [Stevens] became chairman?

Dr. Moss: I retired in '90.

Dr. Colman: What I'll do is I'll give a little brief intro.

Dr. Colman: We're here today on I think it's the 23rd of February 2006, and this is a continuation of the ASTRO History Committee Oral History Project, and we had the great pleasure of interviewing Dr. William Moss about a year ago. We're back today to talk mainly about the founding of ASTRO in preparation for the 2008 50th Anniversary celebrations. And I'm Martin Coleman and this is Carol Marquez with me here from Oregon Health Science University, and eminent radiation oncologist and author, Dr. Moss, and we're delighted to be here today. Thank you very much for having us in your home, and Bill's wife, Rose, is listening carefully to us from the wings there, and so what I was interested in focusing on today is the history of ASTRO, the actually founding of ASTRO, if you could take your mind back to the '50s or whenever Dr. Juan del Regato started the Radiation Therapy Club, and tell us where you were in your career at that point and I know you trained with Dr. del Regato.

Dr. Moss: I'm not sure he did this alone or with the help of others. He started it by notifying all the individuals who did radiation treatment alone to meet in Chicago at the time of the RSNA. However, he was concerned that the leaders of the RSNA might object to having a competing society meet during the RSNA, so he called it a club. I don't think anybody else had input into it at that time. There were about 30, maybe 25 individuals in the United States who were doing radiation therapy alone. He notified them all and we met at the steak house there in Chicago during the RSNA, I was very low on the totem pole, and sometimes I tagged along and sometimes I didn't, depending on how he felt. It was a good group, people like Lampe and Buschke

and Cantril, Lenz and Murphy from Buffalo, New York, all of those people. It was a good group, very exclusive [laugh] but the thing then grew slowly as more trainees finished in straight radiation therapy. Somewhere along the line, I think it was in the late '50s, they decided to formalize the organization into ASTRO. I'm not sure of the date. I think it was '58.

Dr.Colman: In '58, yes.

Dr. Moss: And it changed its name from a club to ASTRO. And that was the whole purpose of the organization.

Dr.Colman: What was the year, approximately, when the Club first met?

Dr. Moss: It was in the early '50s, but I'm not sure of the date. I've racked my mind and . . .

Dr.Colman: I think '53. Is that about right?

Dr. Moss: That's about right.

Dr.Colman: And at that time, you were a staff radiation oncologist or radiation therapist at . . .

Dr. Moss: When I came back from Manchester, England in 1950, I went first to Missouri State Cancer Hospital where I was chief. Then after about two plus years I went to Washington University at St. Louis where I was head of the section. It didn't have a department then. I left there, I think I left there in '54 to go to Chicago.

Dr.Colman: So the time when this was founded was just before you went to Chicago and del Regato was already in Colorado Springs?

Dr. Moss: Yes, he was in Colorado Springs.

Dr.Colman: And any others? You mentioned several . . . I've also heard a number like 28 at the first Club.

Dr. Moss: That is about right.

Dr.Colman: Do you know any of the others who were there then?

Dr. Moss: Well, there was Gilbert Fletcher, Phil Rubin, Lenz, Lampe, Cantril, Buschke, Nickson, Carpender, Anna Harmon, William Harris, Simon Kramer…

Dr.Colman: Henry, was he there?

Dr. Moss: I don't know if Kaplan came in right away. He was definitely later, but I don't remember the dates when these people came in at all.

Dr.Colman: Bob Parker . . .

Dr. Moss: Bob Parker was there. There were several other individuals who were kind of retired and doing radiation therapy alone.

Dr.Colman: From your recollection, who was the . . . where did this concentration on radiation therapy start? Who were the first people in the US who actually focused on radiation therapy?

Dr. Moss: I don't know who was first. I know Lenz was famous.

Dr.Colman: And he was where?

Dr. Moss: He was at Columbia University at New York, and Lampe in Michigan, Cantril and Buschke in Seattle. Those were really kind of the senior people.

Dr.Colman: And the availability of . . .

Dr. Moss: Fletcher came in about . . . let's see, I was in Paris in 1948/49, and he came to Paris, so he was already in '49, he was already established in Texas.

Dr.Colman: And can you recall anything of the political lobbying that led to the founding of ASTRO, the conversion of the Club into a formal organization and the opposition to it?

Dr. Moss: To my knowledge, there was no opposition to it. I don't think the people who were doing both diagnostic and radiation therapy voiced any strong opposition to it.

Dr.Colman: And there was no official opposition from, say, the American College of Radiology or . . .

Dr. Moss: If there was, I didn't hear it.

Dr.Colman: And the . . . tell us a bit about . . . I have a list of what they call the founding members of ASTRO. It's about 122 names and you're in that group and I'm wondering if you can tell us anything about the first meeting of ASTRO. Can you remember what . . .

Dr. Moss: I don't know if it was the first meeting, but I do remember there was Jim Nickson, Henry Kaplan, del Regato - those three were competing for recognition. [laugh]And there were some fireworks.

Dr.Colman: Nickson was at Memorial . . .

Dr. Moss: Nickson was still at Memorial; he had yet to move. That's right, he had already moved to the University of Chicago from Memorial. Kaplan was already at Stanford and del Regato was at Colorado Springs.

Dr.Colman: And Gilbert Fletcher wasn't in the mix?

Dr. Moss: You know, if Gilbert was there, he didn't voice very much at that time. I don't remember Gilbert, but I certainly remember Kaplan, del Regato and Nickson.

Dr.Colman: Where was the first meeting held?

Dr. Moss: That meeting that I remember was in Chicago. I don't know, but I think there was more quibbling than there was genuine justified arguments.

Dr. Colman: What were the thoughts about what the role of ASTRO should be in those early days? I mean, in terms of education, research, political lobbying . . .

Dr.Moss: I think they were pretty much what they are now, and del Regato had written something that was supposed to outline that, and there was some discussion of that. I don't think there was a lot of friction about it as I recall.

Dr. Marquez: So what were these three men . . . what were they arguing about or quibbling about? Were they arguing about the science of how they did their business or was it . . .

Dr. Moss: I think it was about who was going to do what. [laugh] That was the whole thing.

Dr.Colman: I'm sure this is in the ASTRO records, but who was the first President of ASTRO?

Dr. Moss: Simon Cantril, I think.

Dr.Colman: Cantril, uh huh.

Dr. Moss: And Cantril was a benign wonderfully pleasant person, just ideal to the be the first.

Dr.Colman: And no objections from any of the others, each of the others wouldn't have agreed to each other being President . . .

Dr. Moss: If you look at it and you go down the line and you see when Kaplan and del Regato came way down the line [laugh]

Nickson, too. That meeting where there was so much friction, Nickson had too much to drink and I'm not sure about the others, but that played a role in it.

Dr.Colman: Well, I came to Michael Reese just after Nickson left and I'm afraid that even later in his career that was one of the issues.

Dr. Marquez: Was there any . . . ASTRO, the people you described, it's interesting that they are on both coasts. Was there ever more of a regionalism to ASTRO where the East dominated or the West dominate? I mean, it seems like it's always been pretty universal.

Dr. Moss: I think it was universal. I didn't notice any diversion between the East and the West. There was one guy who was in Mount Sinai in New York, William Harris, and he was a quiet very intelligent guy who contributed a lot to the whole thing, but he was kind of below the surface.

Dr.Colman: How about the two other New Yorkers that come to mind, Ira Kaplan and Milton Freidman? Did they . . .

Dr. Moss: Milton Freidman was always very vocal. Ira Kaplan was quiet. Milton Freidman was a firey son of a gun and it was a little bit surprising that he didn't contribute, but I don't even remember him being in there. Was he ever President?

Dr.Colman: I'm not sure. You mentioned in your previous interview about Simon Kramer having been in England initially and then came to the States. Where did he come to the States and where did he get involved with ASTRO?

Dr. Moss: I don't know. I met him at the Middlesex Hospital when I was there. He came to see me one day when I happened to be at the VA Hospital in Chicago. He was there for the RSNA or something, and we had the whole day together. And that's the first time I really interacted with him and . . . but for a long time, he was not in the front in radiation oncology. He was working in Philadelphia. it was the Patterns of Care, that brought him to the forefront. He was active even before that.

Dr.Colman: And did he come straight to Philadelphia from England?

Dr. Moss: I'm trying to think. I don't know. I believe he moved to Philadelphia from some other U.S. facility.

Dr.Colman: Branching away from ASTRO for a little bit, tell us about your family. I know that you had told us about your career development in the previous interview, but Rose was telling me a few minutes ago that you have six children and had a long marriage. What year did you get married?

Dr. Moss: We were married in 1945, June 28th.

Dr.Colman: And where did you meet or how did you meet?

Dr.Moss: At the University of Missouri, and we were going to have a class softball game out in the pasture on the fringe of Columbia, Missouri. It just poured down rain, and so we decided not to have the game, but we would all meet in a tavern. A guy named Walt Kennedy came up and said there's this sweet little redhead. You've just got to meet her. So I invited her to the ball game and then it rained. I took her to the tavern. We had a few beers, but there was much noise and so it was a very bad place to meet and it was not a good date, we met again after that.

Dr.Colman: What year was that?

Dr. Moss: 1941

Dr.Colman: And you first lived in Missouri?

Dr.Moss: Yes, it was '41. I had graduated from The Citadel in Charleston and I wanted to go to med school. I had planned to be a physicist, but suddenly I had a chance to go to med school but I didn't have the biology credits, so I went one summer and one full year to the University of Missouri to get the biology credits. I entered medical school right after that. In the University of Missouri they had two years and then I had to transfer. While I was in University of Missouri that I met Rose.

Dr. Marquez: Did your family go with you to all of the places that you ultimately lived like in London and Paris?

Dr. Moss: Yes. We had two kids during my training. When del Regato said, 'You should probably go to Manchester,' I addressed Paterson in Manchester a letter and said, 'I'm bringing my wife and two kids.' He wrote back immediately saying, 'Don't do that.' There was no housing, food was hard to get, it was still rationed, and the houses had no central heating. That was in the letter and I wrote back and said, 'Well, she's coming anyway.' And so that lady who was the deputy there, wrote me back and said, 'We have a house for

you,' and so we were delighted. Anyway, when we arrived there, there was this house, dark, no heat, cold as ice, strange place. It was a bad beginning because one baby was in diapers and the one was just out of diapers. It was hard for Rose. There was a little tiny fireplace that couldn't heat anything so she practically lived in the kitchen where there was a gas burner. It was a hard time. Then after that year, we went to Paris for six months and we lived in one room about like this, and a bedroom about like that, all in all it was a pretty good place, a big improvement. However, the day we arrived in Paris, was a different matter. A guy had written me, that there's this woman on the fringes of Paris and who had a house and she'll give you a good room and feed you. So when we arrived at the airport, we went by cab to her house. It was an awful place. The bedroom was upstairs and right outside the bedroom was a sink with cold water and that's all there was. And over in the corner an outdoor toilet inside. It was a two-holer, but it was on the second floor with a chute, and so we had that for a couple of days. Then we moved into Paris where we had a better place.

Dr.Colman: Who did you work with in Manchester?

Dr. Moss: Paterson, of course, was the chief and they had a series of other people who were . . . Eason was fairly prominent. We worked with all of the secondary people, Tod and Dobbie, Batley, Bratherton, etc.,very little . . . well, we came in contact with Paterson almost every day, but not closely.

Dr.Colman: In physics?

Dr. Moss: It was Meredith and all his staff. They were good people and just absolutely superb teachers and there was never a better teacher than Meredith.

Dr.Colman: How about in Paris?

Dr. Moss: Well, my first contact by correspondence was with Lacassagne. We got there and I went to The Foundation Curie and he said, 'Come on. We'll go see Baclesse. I went in there and he introduced me to Baclesse. They talked real fast back and forth, but it was obvious Baclesse was not pleased with me there. But . . . I was there. It took a little while for things to warm up.

Dr.Colman: Who was senior between the two of them?

Dr. Moss: I think Lacassagne was. He was sort of chief of the whole place and Baclesse was just in the patient care area. They had a lot of research going on.

Dr.Colman: So then you came back to the United States with two children and tell us about where you were living and how your family . . .

Dr. Moss: When I came back to the US, I was immediately made head of the section, the radiation section at Missouri State Cancer Hospital. That was just the absolutely ideal place for radiation oncologists because you had all of these patients, they were indigent patients from rural Missouri. The State paid their costs. You could plan their treatment and if you wanted to set up a clinical trial, you had control of the things. It was a very, very good clinical institution.

Dr.Colman: Who was your Chief of Physics then?

Dr. Moss: Didn't have one.

Dr. Moss: It wasn't like England where you had a physicist, but I already had a degree in physics and while I was in training, I went to New York to take Quimby's course, and so I knew her book forward and backward before I ever went there, but she reinforced the important things.

Dr.Colman: So you were doing your own physics calculations.

Dr. Moss: Well, in Manchester I learned how to add up isodose curves. I don't think anybody nowadays knows how to do that, but you would take those clear films and lay them over each other and add up the isodose lines. But at the time, I didn't really see the need for physicists the way things were done at that time in Missouri.

Dr.Colman: What equipment did you have?

Dr. Moss: We had three 250kV machines and superficial machine.

Dr.Colman: And brachytherapy?

Dr. Moss: Oh, yes, we had plenty of radium and Cobalt 60. In Manchester I had very good indoctrination into radium usage. I did a fair amount of that. And I can still remember del Regato had developed this technique for doing transvaginal irradiation for carcinoma of the cervix. In

Manchester I had learned the faults of that and the advantages of radium, and so I came back and I started using radium. The day I arrived, the Chief of Surgery came to me and said, 'Bill, you're changing things.' I said, 'Yes.' [laugh] He was skeptical because del Regato had been so much in charge. Any deviation from what he did was "wrong" and so they had to get used to my way of doing things.

Dr.Colman: Tell us about your family when you were in Missouri. You still had two children then?

Dr. Moss: Yes, and then my third child, a boy, was born in 1951.

Dr.Colman: The first two were boys?

Dr. Moss: No, the first . . . wait a minute . . . the third one was a boy. The first two were girls. The third one was a boy and then in 1953 the twins were born, we had twin boys. And in 1958 my last daughter was born.

Dr.Colman: Tell us all their names.

Dr. Moss: Well, Anne is the oldest and she's in New York City as a writer and a teacher. Linda is the second one and she's in Vancouver Island, Canada. Courtney is a nurse and at the moment she's primarily a housewife. She's married to a dermatologist. And the next one was Robert and he started as a forester and graduated from the University of Montana and became a carpenter. He builds houses. And one twin is a physician.

Dr.Colman: What's his name?

Dr. Moss: Jerry. He practices in Salem. He lives in Monmouth, Oregon. The other twin, George, is a computer person. He works in the central computer center for airline maintenance and scheduling of flights. He lives in Kansas City. And then the youngest one is a housewife named Betty, and she lives in Iowa City.

Dr.Colman: And the . . . you were in Missouri. I'm intrigued to know what was your relationship, if any, between Missouri State Cancer Hosoital and Washington University where you moved to eventually, right?

Dr. Moss: Well, at that time, Washington University used that hospital as one of the institutions where they sent residents for rotation. It had not yet broken away from

that when I was there. Eventually, its affiliation stopped and went to the University of Missouri which became stronger after they made it four years.

Dr.Colman: And what year did you move to Wash U?

Dr. Moss: I think it was 1952.

Dr.Colman: And where was Bill Powers at that time?

Dr. Moss: He was in training at Washington University.

Dr.Colman: Trainee of yours, okay. At Wash U?

Dr. Moss: No, he was still in diagnostic radiology.

Dr.Colman: And your move to Chicago was pretty soon after that, wasn't it?

Dr. Moss: I don't think I went to Chicago until '54.

Dr.Colman: Was Wash U . . . when you moved there, what was the status of the radiation therapy?

Dr. Moss: It had been done by a number of people who kind of filled in. Bill Siemens, who was a primarily a diagnostic radiologist, was in charge of it. When I was there they had a couple of 200 kV machines and one old 400 kV machine. And they had not yet gotten their betatron which was shortly thereafter.

Dr.Colman: After you left?

Dr. Moss: Yeah, they had ordered it while I was there, but they got it afterwards.

Dr.Colman: And then you moved to Northwestern and then you really founded and established the department at Northwestern.

Dr. Moss: When I went there, I was at the VA. They called it the VA Research Hospital, brand-new hospital, they had a megavoltage machine in the basement and I was really eager to use that, and they had a number of 250 kV machines.

Dr.Colman: And was there an affiliation with Northwestern?

Dr. Moss: Oh, yeah. Loyall Davis was the Chief Surgeon at Northwestern and he was essentially responsible for having that hospital right there next door. It was across the street from Northwestern Medical School and Passavant Hospital.

Dr.Colman: On the north side.

Dr. Moss: Yeah. And the affiliation with Northwestern was very strong and so after a short time, I moved over to take over the department at Wesley Hospital which was on the other corner.

Dr.Colman: And when you moved there, who else was there?

Dr. Moss: I was it.

Dr.Colman: You were it.

Dr. Moss: And then I got Bill Brand.

Dr.Colman: Did he train with you?

Dr. Moss: He was a trainee of mine. And after that Jerry Beck.

Dr.Colman: Jerry.

Dr. Moss: Yeah, then Bill Molahan…and I'm trying to think of the name of the other guys. Dr.Colman: And most of those folks at Northwestern, it seemed to me, stayed there or stayed near there.

Dr. Moss: Of course Hoover stayed for a spell and then he moved to the North Shore. A guy named Jeff Smoron was a trainee of mine. He stayed there for a while.

Dr.Colman: And you told us about your move to Oregon, so at what point was your youngest daughter born? In what year, again?

Dr. Moss: My youngest daughter was born in April 20th, 1958.

Dr.Colman: Any other recollections about ASTRO? How the Society sort of evolved in the early years, how the meeting developed? I mean, my first meeting was in 1972 or something and we were all in one hotel. It was small. How was it in the '50s?

Dr. Moss: Well, most of my association with the ASTRO was when it was small and that was the great advantage of it. You knew most of the people and that's what made it a good group.

Dr. Marquez: When did the Red Journal start or when did that relationship begin?

Dr. Moss: I'm trying to think.

Dr.Colman: The Red Journal [inaudible] [00:34:40] the United States, so it was in the, I think, late '70s or early '80s.

Dr. Marquez: And was it originally kind of a publication that the results of ASTRO or did it . . . or was there no relationship between what was . . .

Dr. Moss: Phil Rubin was the main pusher for the Red Journal and he thought he owned it. [laugh] Well, it was his energy that did it. He was editor and he was pushing it, and they were publishing all the results of the meetings and so forth. At some point along the way, he was approached to make this a journal for the Society instead of his personal journal, and so he did it. He was generous and it became the Society's journal.

Dr.Colman: In the early years, did ASTRO, when it was established in '58, did it have a journal for the [inaudible] [00:35:53]? Was there a place the journal, the [inaudible] were published?

Dr. Moss: No, early on our papers were published in the Gray Journal, and to a less degree, in the Yellow Journal.

Dr.Colman: The American Journal of Roentgenology, the gray one and obviously now . . .

Dr. Moss: The Gray Journal (Radiology) was the chief source.

Dr.Colman: And so can you . . . any personal recollections of the early meetings?

Dr. Moss: Not really. After a while, things were pretty much as scheduled. I don't remember much friction.

Dr.Colman: Were the meetings always held in October? Late in the year?

Dr. Moss: I think so.

Dr. Marquez: I remember when I first came into this, it seemed to me that the meetings were located, that the placement of the meetings was interesting to me that they rotated originally between New Orleans, San Francisco and DC. It seemed like some of the original kind of rotations of the meetings. Since, it's changed a lot since.

Dr. Moss: We tried to have it on each coast, alternately, or something to balance it out, anyway, but I don't know . . .

I was never in on the discussions about where the meetings were held.

Dr.Colman: And you're right. It has rotated around.

Dr. Marquez: Yeah, for a while there, it was always in those towns, and now it's moved . . . I thought it was because all the people that were planning them liked to eat, because they were good eating towns, and now people like to golf because they're all in golf games.

Dr. Moss: I remember the meeting in Key Biscayne. I was the President of ASTRO that year.

Dr.Colman: Yeah, I remember that.

Dr. Moss: And I thought that was a good . . .

Dr.Colman: That must be the time that I was removed from where I dropped off the abstract on the last day at your house in Chicago. I think that must have been the year because that was when I was in Chicago in '73/'74.

Dr. Marquez: Were there papers . . . I mean, I remember some ASTRO meetings when certain papers were presented that, to me, were seminal papers that really changed how we think about things or really were important findings at the time. In looking back, did you know at the time when somebody presented something, this is going to be important?

Dr. Moss: Usually you knew when they were going to be important, and I can remember a few papers like that when I came back and wanted to do things different, so . . .

Dr. Marquez: And I just have one other question. In terms of what you had for diagnostic radiology, you were trained in diagnostic radiology . . .

Dr. Moss: No.

Dr. Marquez: Not at all.

Dr. Moss: Not at all.

Dr. Marquez: So that's interesting. So how . . . what did you use for your diagnostic piece? What tools did you have? I mean, for the residents we train now and for me, the concept of not having a CT or an MR are all of the things we have…

Dr. Moss: When I was at Manchester, they had one of those X-ray units that they used to take a radiograph of fractures in the

operating room, portables. And, of course, that had the advantage of being very portable, you could roll it around, but the distance from the target to the film was fixed by this arm and it never was what you really used if you wanted to get a distance like that, you couldn't separate the two. So it was not a true simulation. It had a diaphragm that you could modify or you could make one easily and so . . . but that was a simulation we used and Wesley, in Chicago. We had one right in the department and we gave barium and intravenous contrast material and took a lot of films right there with that machine. But Simon Kramer was one responsible for making a proper simulator. It was Picker. That Picker simulator was the first really good simulator in the United States. Wwe got one here in Portland the day I moved here, so that was my first really good experience with quality equipment.

Dr.Colman: On this issue, following up on Carol Marquez's question, the early folks who concentrated on radiation oncology like Buschke and Cantril, those people had all done the dual training, right? They were radiologists.

Dr. Moss: Most of them were general radiologists who had, for one reason or another, done therapy alone.

Dr.Colman: Now, you must have been one of the very early people to do a straight therapy residency.

Dr. Moss: I was del Regato's first straight radiation therapy resident.

Dr.Colman: And del Regato must have had the first training program. Did he? Or were the others in the country . . .

Dr. Moss: I'm not aware of another. I think it just kind of migrated into it and became that. I don't know of anybody else who was training in straight radiation therapy at that time. It was a lonely feeling. The day I arrived in del Regato's department he called the ABR office to get the Board's okay for me to train 3 years in radiation oncology. It was an oral "OK" followed by a letter. And people told me I was crazy, I wasn't going to make a living.

Dr.Colman: Even in the 1970s, most of the people in the early '70s were not getting [well compensated][inaudible] [00:41:58] had done some radiology and then like an extra year or two of radiation oncology fellowship, the people I knew.

Dr.Marquez: Yes, I remember because I trained with Ted Phillips and he was like that, because he talked about reading X-rays to make money, just reading chest X-rays to make money, and so he was definitely double trained.

Dr. Moss: Well, in 1974, this had been the year when they decided that you either had to take the radiation oncology exam or the diagnostic exam, but you couldn't take both unless you had three years of radiation therapy in, three or four years of diagnostic, and then you could take both, but that was kind of put an end to it all.

Dr.Colman: In '72 which was the year after [inaudible] [00:42:50] in Philadelphia, there were two big rooms of examinees - one for straight diagnostic radiology and one for general radiology which was the dual training and radiation therapy [inaudible] [00:43:07], and there were about 200 people plus in the room, and there were 12 of us that were straight therapy in '72, so that was sort of a surprise to me coming here at that time. So you finished your training in what year, now?

Dr. Moss: 1950.

Dr.Colman: Okay, so that's . . .

Dr. Moss: I finished it in the summer of '50 and then I went right straight to . . .

Dr.Colman: So that's an interesting sort of timeline because 1950 approximately, if you were the first one, the first straight therapy trainee . . .

Dr. Moss: I'm not saying I was the first. I doubt I was the first!

Dr.Colman: Yes, I know, but I think you must have been one of the first in the US, and in '53 or so, the Club was formed. In '58, ASTRO was formally incorporated, just a few years.

Dr. Marquez: So did you have to take Boards? Did you have to take oral Boards?

Dr. Moss: I took oral Boards in radiation oncology, and I had Portman and I had Douglas Quick. And Douglas Quick had lost his fingers from the use of radium.

Dr. Marquez: Oh, wow.

Dr. Moss: All during the exam, he was waving his hand and you'd kind of fixate on his loss of fingers.

Dr.Colman: Am I in the right field? [laugh]

Dr. Moss: But he did that on purpose and he was asking me questions about radium and I think I gave the right answer.

Dr.Colman: Actually, one of the interviews we did was with Lillian Fuller and she told the story about the three cobalt units and the one in London they had done all the dosimetry on it at the factory where they were putting them together, so when they installed it in the hospital, they were able to use it right away. The second and third ones, I don't know exactly what order they were delivered, where in Saskatchewan where Harold Johns was, and he was a meticulous physicist. He spent a long time doing the dosimetry before he . . .

Dr. Moss: It was such a good unit.

Dr.Colman: Yeah, but before they could use it on patients, he had done everything.

Dr. Moss: It had that long collimator and all of those bars.

Dr.Colman: And the rumor at that time, actually I have not hear this validated by anybody, but the rumor about Fletcher's unit at Anderson was there were no activating sources. They put the two Canadian ones right in the center of the flux of the reactor, and the Anderson one tookmuch longer for the cobalt to reach the desired level of activity and so he had his delivered later, and that way the two Canadian units were both operational before the M.D. Anderson one.

Dr.Colman: Well, I'm sure there's a lot of other stuff . . .

Dr. Moss: It was made in Oak Ridge and I visited Oak Ridge when it was in the formative stage and I saw it being developed.

Dr.Colman: Okay, so the device was made in Oak Ridge, but the cobalt source, I think, came from Canada. I think all three cobalt sources came from the same reactor.

Dr. Marquez: So why was the M.D. Anderson unit bad?

Dr. Moss: It had a big source diameter and a huge penumbra it was not a very intense source, so they only treated head and neck, short distance like that.

Dr. Marquez: And did the cobalt units come out after the betatron or . . .

Dr. Moss: Yes. The first betatron was put in the University of Illinois and it was in the very early '50s and Washington University got one just as I left there in 1954 or '53 and the University of Illinois had had theirs a long time already.

Dr.Colman: And two linear accelerators were delivered to University of Chicago and [inaudible] [00:49:28] in the early '50s.

Dr. Moss: I went down there and saw them both and they were really long things like from here to yonder.

Dr. Marquez: Oh, like an old linear accelerator . . .

Dr.Colman: The Michael Reese one was actually on the second floor and the beam came through the roof and the applicator device stuck down from the roof and it had a 15° range of motion, that's all, so you had to move the patient around.

Dr. Moss: The University of Chicago's was horizontal.

Dr.Colman: It was a standing . . .

Dr. Moss: But you couldn't turn the thing. You had to turn your patient. But it was half a block long.

Dr.Colman: They had all sorts of immobilization devices for patients to be immobilized in a sitting position so they could treat head and neck cancer.

Dr. Marquez: When you look back over the radiation therapy literature, there was definitely a time when you treated benign disease or when you treated . . . and our residents now can't really conceive of . . . it's an unusual time when you ever treat benign disease. Was the percentage always that it was way more malignancy or was it . . . how did that percentage change over the years?

Dr. Moss: In every practice I was in, benign disease was unusual. When I first started, I epilated a few patients and we treated bursitis and some benign skin diseases.

Dr. Marquez: You intentionally did.

Dr. Moss: When I was in St. Louis and I can't think what other benign diseases we treated . . . there weren't very many.

Dr.Colman: Did you ever treat enlarged thymus glands and kids with tonsilitis?

Dr. Moss: Yes. In Chicago . . . I didn't want to do it and yet I was pressured into doing it, and I might have treated half a dozen kids and that was it.

Dr.Colman: At Michael Reese, they treated 5,200 . . .

Dr. Moss: I know. They were the most frequent in the U.S.

Dr.Colman: The whole research project and on grant . . .

Dr. Moss: And how many cancers came?

Dr.Colman: Well, the incidence . . . there was about a 25% incidence of thyroid nodules and about an 8% incidence of thyroid cancer, but it was related to dose, the people who got two or three cycles of the tonsillar radiation had a much higher risk than the ones that had one cycle.

Dr. Marquez: Well, I think the only thing that our residents still see is keloids that we still get, but that's I think in part because of the referral pattern . . .

Dr.Colman: But you must have gone through in the last ten years the intravascular radiation . . .

Dr. Marquez: Right, and actually we actually stayed out of that. We never got involved, so it was actually very fortunate that we never had that ramp-up and then that drop-off.

Dr. Moss: Why did it drop off?

Dr.Colman: Because of the impregnated stints . . .

Dr. Marquez: With the chemotherapy.

Dr.Colman: . . . that do the job instead of . . .

Dr. Marquez: They don't have to involve us. [laugh]

Dr.Colman: But a lot of things like that where it's cycled through like breast irradiation, I mean, there was a 10- or 15-year period where postoperative radiation therapy for breast cancer disappeared and then it started coming back again.

Dr. Marquez: And endometrial is probably the best example of that. Before, you probably treated every endometrial [cancer] that was diagnosed almost in your hospital.

Dr.Colman: Dr. del Regato was a great proponent of preoperative radiation for endometrial cancer.

Dr. Moss: I made this statement and I even wrote it down. If postoperative radiation is necessary, preoperative should have been given. And people started making fun of that and of me for saying that, but I still believe there's a lot to it in the case of the uterus, if you know you're going to have to give it postop, you have the uterus to hold the radium before you take it out, and you can use that to give that local dose right there where you'll have to.

Dr.Colman: Well, I went through a compulsory evolution in my thought processes because the gynecologists were driving the process and I sort of was won over to their logic which was some of the patients don't need it, and by doing postoperative, you can select those who need it.

Dr. Moss: That's true.

Dr.Colman: [name] [00:55:04] persuaded me to stop doing preop.

Dr. Marquez: When did you switch from . . . I can't even imagine doing brachytherapy with radium. I never saw it, never did it, and so did you really have to handle the sources and then when did the switch happen to cesium or other sources?

Dr. Moss: At Manchester they had radium and they had cesium when I was there and I might have used radium three or four years after that.

Dr. Marquez: And did you have long, long forceps or did you just kind of grin and bear it?

Dr. Moss: You had these long forceps with the grooves. Otherwise you'd ruin the needle.

Dr.Colman: When I was a resident between '68 and '70, we had both [inaudible] [00:56:16] cobalt, and we had radium in the safe, so if we had too many cases for the number of [inaudible] [00:56:23] sources, we got back to the Manchester [inaudible] and we had long forceps and this stuff was loaded and we'd fill [inaudible] [00:56:39] we were in the operating room with live sources and long forceps to handle . . .

Dr. Moss: It was always preloaded in the proper place and you'd use forceps to put it back all very quick and well planned.

Dr.Colman: And then when you took it out, it went straight into the [inaudible] [00:56:59] and back to the radium custodian [safe].[inaudible] [00:57:08]

Dr. Moss: Of course, they told you that at Manchester, too.

Dr. Marquez: . . . more accelerators in this town than you can shake a stick at. It's crazy. There's one on every street corner it feels like. It's changed just in my ten years here.

Dr.Colman: Well, the Certificate of Need was supposed to address that, but it never worked.

Dr. Marquez: Yeah, and now with how much we get for MRT, forget it.

Dr.Colman: And you touched on something in the previous interview that I'd like to pick up on relating to reimbursement for radiation oncology, which I was very interested in reading going back on it. Tell us a little bit about that, when you first started presumably the radiation oncologists were all salaried and the income was state supported. How did it evolve?

Dr. Moss: For example, at Wesley Hospital when I was there, there were maybe 50 patients because they were charged $5.00 a treatment and so you can see how much that was for the day and you had several technicians and I was the sole radiation oncologist, but that was really very meager income, so it had to be supported by the hospital. Any kind of support from the hospital, you're at the mercy of the administrator for equipment and all that stuff, so that's why so few went into radiation oncology, it's what the finances were. That all changed as soon as Medicare went into affect in 1964 and Medicare did start reimbursing properly and that was it.

Dr.Colman: And the evolution of the third-party payers other than Medicare, how did that come about for radiation oncology?

Dr. Moss: I don't know, but Blue Cross/Blue Shield and all those things, they started looking at the payment of all the charges in the hospital and radiation became one of their recipients.

Dr.Colman: So as you started collecting money, let's say, from Medicare and from other payers, did the hospital stop subsidizing or funding you? Did you have to pay out of the revenue or was there always . . .

Dr. Moss: When I came to Portland, I got a commitment from the Dean for a salary before I ever came there. Then, I told you before about our experience with charging Medicare . . .

Dr.Colman: And people being surprised you were doing it [laugh]

Dr. Moss: That was the total of the income from the care of patients when I came here was about $30,000 and that was for the whole department, for everything.

Dr.Colman: How many patients were you treating a day then would you say?

Dr. Moss: Eighty. A lot of [inaudible] [01:01:07] patients, and so . . . but even so, it was not anywhere near able to support the M.D.s.

Dr.Colman: We're gradually moving to a system now where they don't want to give us anything. They want us to function entirely on revenue and the hospital collects all the technical fees and so it's very interesting the way things have evolved from being completely supported by the administrative structure . . .

Dr. Moss: When I came here, Dr. Clifford Allen had been Chief and he was a very wonderful guy, a very pleasant guy, but he was not aggressive and as far as the finances in radiation oncology was concerned . . . so the department had a long way to go.

Dr. Marquez: And we're very fortunate. We still have that relationship. We're one of the few departments that still gets academic salary from the School of Medicine. If you talk to other . . . the neurosurgeons, the medical oncologists, the general . . . a lot of other people within the hospital, they don't get an academic salary.

Dr. Moss: Why is that? That you all get it and they don't?

Dr. Marquez: Because you struck a good deal [laugh] I think is the answer. I think it's the true answer. It's . . . that's just how it is. It's our . . . the four of us are still academically salaried. The people that we have that work . . .

Dr. Moss: They have the other income to supplement that.

Dr. Marquez: Right so the outlying people we . . . they don't get academic salary support, so they're paid through technical for professional fees.

Dr.Colman: Now, the other thing that came up in the previous interview was I think Ken Stevens might have mentioned that

Oregon was maybe the first independent department of radiation oncology in a medical school in the United States?

Dr. Moss: Well, yes, and that's one of the reasons that it was appealing to me because previously at Washington University, and less so in Chicago, you had this Chief of Radiology and he was Chief of Diagnostic and Chief . . . and your income, your equipment, all of your finances were handled by that guy and he did not always have the welfare of radiation oncology at heart, and so it was sometimes a terrible struggle, and when I saw this department here separate from diagnostic, not any longer dependent on Dotter who was Chief of diagnostic radiology, it was appealing and I could talk straight to the Dean and that was it.

Dr.Colman: So the structure of the independent department was here before you came here?

Dr. Moss: Yes.

Dr.Colman: How long had it been in effect?

Dr. Moss: I don't know. Several years. And I talked to Dr. Allen about it when I came here for an interview. I said, 'How come you're like that?' and he said, 'I don't know. Dr. Holman, the dean, and I play golf. When I was out on the golf course and I wanted a separate department and he said okay.' Just like that, because Dr. Dotter was a strong person and sometimes he made decisions that Dr. Allen didn't approve of, so . . . this got him a seperate department. [laugh] And now, I think most departments in the United States are separate.

Dr.Colman: Yes, I think it's by far the majority . . . it was 50% somewhere in the '90s, I think.

Dr. Moss: It moved radiation oncology to its proper place.

Dr.Colman: And one of the things that you described in one of the places [where] you were was probably the situation in a lot of places which was in the hospital it was a separate department, but academically you were still part of radiology and . . .

Dr. Moss: In Wesley Hospital in Chicago, I was separate from the diagnostic and I liked that, but over in the med school, Dr. Barth was still the Chairman of radiology. He didn't

have anything to do with the money aspects of the business.Dr.Colman: Now you were involved with the Board over a very long time. Can you tell us a little bit about the Board Exam process?

Dr. Moss: I don't know the date it started or anything like that, but in the beginning, as far as when I started on with the Board in the 50s. There was one examiner in radiation oncology and two examiners in diagnostic. If a person failed X-ray therapy but answered all the radium questions correctly, you might get a certificate in radium therapy and put that up on your wall. Or if you took the Board in General Radiology and failed diagnostic, they could get a certificate for one year of training in radiation therapy. But these certificates were exactly the same as when I got my certificate in radiation therapy. It was the same as if the guy had flunked only diagnostic.

Dr.Colman: Yeah, he got the same certificate you got for a three-year residency.

Dr. Moss: So that's what they changed. They saw this ridiculous inequality of certificates.

Dr.Colman: So when they started examining in straight therapy, I guess there were, how many, three examiners?

Dr. Moss: Yes.

Dr.Colman: And can you tell us a little bit about how it evolved beyond that to where we are now with [inaudible] [01:08:03], I think?

Dr. Moss: I'm not sure. I know it was just a slow process and change and, of course, the written examination started about 1970. I can't think of the exact date.

Dr.Colman: So initially it was just the . . .

Dr. Moss: Yes, just the oral.

Dr.Colman: Well, the written exam was definitely before '72 because that's when I . . .

Dr. Moss: Phil Rubin was in charge for the first few years and then because I was on the Board, I was put in charge of the written and that was a real chore. [laugh] You had all these guys who were writing questions and then they had to be reviewed. They sent them to me and I went over them.

Dr.Colman: How about the requirements for residency training? Can you tell us anything about how it evolved from the change over to requiring . . .

Dr. Moss: I don't know what the requirements were early. I believe you had to have an internship and that was it. That's all. Not exactly, but I had internship in straight surgery and residency in straight surgery and part of that year I was compelled to rotate to radiation oncology in a cancer hospital to see what they were doing. I liked it and that's why I went into radiation oncology. I think the requirements was just an internship . . .

Dr.Colman: Was there any sort of review in terms of how many cases you had of different things or was it just left to the program director?

Dr. Moss: It was just the program director. Your training program was reviewed by the Board or resident review committee, and they came and looked at the number of cases you had of this and that.

Dr.Colman: And I think initially there wasn't any control over how many resident positions you had - right? - it was just a matter of what your hospital and medical school would fund.

Dr.Colman: I don't ever remember restriction on the number of trainees.

Dr.Colman: I think that came in later because . . . I think it even came in while I was directing a program at Irvine because I don't remember them telling us how many residents we could have in the early years, and then later we started getting a thing saying you could only have four residents.

Dr. Marquez: And that probably came through funding.

Dr.Colman: Initially the restraint was funding, how many would your school support, but later it was the ROC who started saying you could only have three or four positions or whatever it is [inaudible] [01:11:26]. But early on I can remember getting somebody from the Navy who wanted to come do radiation therapy and when I was at Hopkins, the military would often fund positions for people [inaudible] [01:11:42]

Dr. Moss: They let people come for great lengths in Chicago . . .

Dr.Colman: And you just add a resident.

Dr. Marquez: In the mid '50s and even by '60, how many training programs were there? Did every state have a training program or were they kind of only in the big centers that . . .

Dr. Moss: Straight radiation therapy programs were very slow to catch on. When I went with del Regato, it was just a spur-of-the-moment thing, I think, and he wrote the letter and said, 'I'm taking this guy,' and they wrote back and said, 'Okay.'

Dr.Colman: Now it's so structured and formalized, you could open a book and see exactly how many programs and how many residency slots there are to each program . . .

Dr.Colman: Okay, well, any thoughts about this whole oral history process?

Dr. Moss: Not really. One thing you didn't mention. Back in the early days, a lot of radiation oncologists took on chemotherapy and they were doing both chemotherapy and radiotherapy.

Dr.Colman: Tell us about that.

Dr. Moss: Well, it was never formalized. There never was anyone to say you couldn't do it. And the people who did chemotherapy were scarce and so if a person wanted to use combined therapy, they did it themselves. I knew a number of radiation oncologists who gave chemotherapy for Hodgkin's Disease.

Dr.Colman: Tell us about . . . I think that's a very interesting subject that you've raised. Tell us how in your practice in radiation therapy, when did the chemotherapy come in as distinct from some of the other medications that you're providing to patients just as part of your daily management?

Dr. Moss: When I was at Missouri State Cancer Hospital, there was no such thing as chemotherapy there, and in the first edition of my book, I do not mention chemotherapy. The word is not in there. And slowly radiation oncologists and others started treating the Hodgkin's Disease and lymphomas and this was over many years. It wasn't like it started in a day. The history of the development of chemotherapy is beyond me. I do know that surgeons were doing some chemotherapy and radiation oncologists were doing

chemotherapy and maybe some internists were doing it as well. The need for this developed a specialty group . . .

Dr.Colman: So do you remember a time when you were, for example, treating Hodgkins patients and giving them chemotherapy?

Dr. Moss: I never did it, but when I was at Washington University, they had a gentleman there named Dr. Reinhardt who was a superb internist, and he started doing it and it became a practice.

Dr.Colman: You also reminded me about something else, about when you mentioned your book and I have a request to make of you on tape, recorded for history. ASTRO has just in the last few months approved the establishment of a Radiation Oncology Archive, and I'd like to ask you if you'd be prepared to donate your radiation oncology library yearbooks and things and your papers that are relevant to radiation oncology for posterity. I think is would be wonderful.

Dr. Moss: I have some fascinating books. I have a copy of my book from Taiwan, and they copied the whole book on the Xerox machine.

Dr. Marquez: We have a bunch of pictures that Dr. Moss took of patients that we can donate to the archive slides. We still have your slides.

Dr. Moss: Really?

Dr. Marquez: Yeah. You know that big slide holder thing in the ortho room? That's still there filled with pictures of slides of patients.

Dr.Colman: The last time we were here you showed us a strange copy of your book.

Dr. Moss: This is the one that's made in Taiwan, I think. Let me see.

Dr. Marquez: There's Chinese characters.

Dr.Colman: It's in English.

Dr. Moss: Oh, yes. It's an exact duplicate.

Dr.Colman: Second edition.

Dr. Moss: See down here?

Dr.Colman: Yes. Copyright 1968.

Dr. Moss: That's the one that I showed . . . you remember Bill Rider?

Dr.Colman: Yes, sir.

Dr. Moss: That's what he wrote that should have been in the second edition. He was very kind.

Dr.Colman: His English is extremely well balanced. That's a compliment. [laugh]

Dr. Moss: For him? He was so caustic. [laugh]

Dr.Colman: It's wonderful. A masterpiece. What a fantastic criticism . . . comment. Well, I hope you will consider bequeathing your archives to ASTRO and make them available for future radiation oncologists. So it's been wonderful being with you today. Thank you very much for having us. I really enjoyed chatting with you. I think I've spoken to you more these two interview sessions than in four years in Chicago.

Dr. Moss: I hope it's worthwhile.

Dr.Colman: It's well worthwhile. Thank you very much.

Dr. Marquez: We have pictures like this in those slides of yours.

Dr. Moss: Big glass slides.

Dr. Marquez: Big glass slides, yes, that's exactly what's in there, a whole beautiful . . . it's actually a cool setup.

Dr. Moss: Really? You have it displayed?

Dr. Marquez: No, no, no. It's this thing where you can pull it out and a light can come behind it so you can see all of the slides in the rack as they're hanging, so it's a very nice thing.

Dr.Colman: Thank you very much for your time in a work day to come and be with us. It's great. Mrs. Moss, thank you. I'd like to get a still picture of the four of us.

Dr. Moss: [Showing a photo from "Therapeutic Radiology" Skin Chapter] This lady had radiation as a kid for acne and she developed this solid skin cancer and that's her . . . see, she was sent to me by the plastic surgeon at Washington Hospital.

Dr. Marquez: Oh, to cut off her nose.

Dr. Moss: Yeah. Then I showed them that and they couldn’t believe it. [laugh]

Dr. Marquez: All right, then.

Dr. Moss: He lost his eye. He came with the lens in his hand and he said, 'This came out of my eye.' And this guy is interesting because he had cancer in both his upper and lower lid and we put the eye shield in.

Dr.Colman: And I should also say thank you to our very capable photographer, videographer. Eleanor, thanks for coming.

Eleanor: You haven't seen this yet. [laugh]