Department of Surgery History Interview
J. Leonard Goldner, M. D.
March 15, 1995

This interview presents Dr. J. Leonard Goldner, James B. Duke Professor and Chief Emeritus, Division of Orthopedic Surgery, Duke University Medical Center. The subject of this interview is Dr. Goldner's career in surgery, and particularly the development of the Duke Surgery Department. This interview takes place in Dr. Urbaniak's conference room, on the fifth floor of Duke Hospital South. Your interviewer is Dr. James Gifford.

Good Morning, Dr. Goldner! Perhaps we could begin by having you tell us something about your professional background and how you came to enter a career in Medicine and Surgery.

My initial exposure to medicine was in my own family as my father was a dentist in Omaha, Nebraska and my two older brothers were in medical school and in training as I was maturing into the college area. My oldest brother became a pediatrician and a general practitioner, and during his medical school days, when I was in grade school, I went to the University of Nebraska where is was working in the pathology laboratory, and I spent the summer there helping him do various kinds of tasks in the Anatomy Department and different locations in the medical area. My older brother went into Orthopedics actually, at the University of Chicago after he had completed his training at the University of Nebraska, and he trained with such famous persons as Alexander Brunchwag and various individuals, Howard Hatcher, names that are known in general surgery and orthopedics, and I visited him at East 59th Street, University of Chicago, while I was in high school and getting ready to go into medicine. So, my medical career was almost predestined. I never thought I would be anything else but a physician, and during my teenage years when I read the book by Will Mayo on the Mayo Brothers, and Paul DeCruf on Microbe Hunters, and various things, somehow my dad always managed to put in front of me. He never said "Read this", but they were always available, and my interest in medicine grew as time grew. I did go to the University

of Nebraska where I was then the third member of the family in that institution, and as an aside, my nephew, my older brother's son completed his education there as a neurologist, and now his son is in medical school. So, we have several generations, and I am going there this May to get an honorary degree from the University of Nebraska, Doctor of Science. So, I finished the medical school there, and my residency there, I entered the U. S. Navy where I was on board ship in the pacific, then to the Mayer Island Navy Hospital which is an amputation center, which was in line with what I was doing, then the Orthopedic Service there for six months, where I again, got an interest in plastic reconstruction, orthopedics, and various things like that. During that time, I had been communicating with Dr. Lenox Baker who was the Chief of Orthopedics at Duke and how I got to Dr. Baker was during my fourth year of medical school, I was looking for an internship, and Dr. Robert D. Shrock, who's name is on some orthopedic procedures in the old days, the Shrock procedure for an elevated scapula, and Herman Johnson who was an expert in clinical orthopedics, they directed me to Dr. Baker. Prior to that Dr. Julian Jacobs who had been a classmate of my second older brother, had come to Duke in 1941 to participate in the residency program. And he was the single resident at that time. And he incidentally went into the Duke Army Hospital that went overseas. So, Dr. Jacobs was before me and then Dr. Chester Waters who graduated from Nebraska who's father was a professor of surgery and one of my professors, had also trained at Duke with Dr. Baker for three years, so Dr. Baker felt that he had two Nebraskans and he wrote me and said that Dr. Shrock has written to me about you and would you like to come to Duke when you get out of the service, sight unseen. I said I already have an appointment at the Mayo Clinic but I think the weather in North Carolina will suit me better because I went to undergraduate school for four years in Minneapolis where the weather was 20 and 30 below zero and my wife, who at that time we were just married, was interested in flowers and warm weather. So, I said, we are going south instead of going north. So, that's how I came to Duke. It was primarily at Dr. Baker's invitation, Dr. Shrock's recommendation and prior Duke individuals, and then the coming out of the war, I figured having been in a lot of close scrapes and various other things, I figured I would set life up to suit us instead of someone else, so I came south. And that was the best move I made as far as my training. I got here in 1946 on an old train that had green upholstery and kerosene lamps above it, and we rolled into

Durham at which time the Washington Duke was the best hotel in town. And that is where we stayed for two weeks because there wasn't any housing. And then we finally got a room in the home of Daberniar Robertson. Mrs. Robertson taught school in Durham for forty years and their children grew up and they became close friends of ours. So, we stayed there for six months as part of the Duke program, and then we went to Warm Springs, Georgia as a part of the rotation, because the Georgia Warm Springs Foundation was on the Duke rotation through the National Foundation for Infintile Paralysis. I spent two years there with pediatric fellowships, so to speak, that was a graduate area, the other was in residency training. That was the beginning of my career in hand surgery, reconstructive and foot surgery, children's orthopedics and scoliosis and all the other things that I was able to participate in. We came back to Duke in 1949, and I joined the staff in 1950. My oldest son, Richard, was born in 1948 and he is a member of the Duke staff now. So, what goes around, comes around. And I started here in 1950, and from then on, it has been a question of more work than I could do, forward progress, and given a lot of responsibility, and a slow, low key orthopedic training program that Dr. Baker pushed into second geer, and then I was able to move into it at a later time. Now, that is sort of the background. Where do you want to go from there?

Well, before we leave your early years, were there specific influences or experiences that led you to Orthopedics?

Yes, as I mentioned, my family's involvement, my brothers' involvement and then at age 17, coming out of the house one morning on a slippery day, I slipped on the steps, fell down the steps and fractured my spine. I was taken to the University Hospital where my second brother was a resident, and Dr. Jacobs whom I mentioned, were there and Drs. Shrock and Johnson came and they treated me, and at that time I became interested in them and the musculoskeletal system. Then, as a medical student, Dr. Shrock was interested in deformities of the feet, so he assigned me to take plaster molds of club feet and then making them into positive plaster molds, and we had about 200 different shaped feet in an area of the medical school. So that got my interest in club feet, which I think has probably been my strongest point during my whole career. I have been working on club feet since I was a medical student and I am still working it . I think we have accomplished a

lot. So it was the Shrock/Johnson influence, the Jacobs/Goldner influence, my own personal injury, and then my experience as a resident, I was given a lot of responsibility in the orthopedic area. As House Officers, you can sort of concentrate on areas that you are most interested in, and of the twelve residents there, I was known as the orthopedic resident because of my interest. So, as work comes to you, then you develop your interest to do it. And then, with my involvement in the United States Navy, at the Mayer Island Naval Hospital in Vileo, California, with Tom Canty, I got into prosthetics and orthotics, and of course, my overseas duty in Okinawa, battle casualities, acute trauma and various things like that. They kept me in Orthopedics and it was obvious that this was a young field, there was much to be learned by research, clinical investigation, and also, of course, it was the field that you could treat someone and within a year they would get well. Whereas, there are many other areas in medicine, psychiatry for example, which I am interested in because of pain, but you are treating the person for the rest of their life. And there are various other things that you treat and treat, and the patients are coping, but not well. Whereas in Orthopedics, you have a fracture, you treat it, there is no complication, they are back doing their duty in six months or a year. That is good for my personality, and it is good for the way that I manage things.

Now, you came to Duke and joined the staff permanently in 1950. Can you talk about the surgery department as it existed at that time, how it was organized, who the key personalities were, how they interacted to accomplish departmental business?

Yes, that was an interesting time. As I think back now, when I got here in 1946, Duke was only sixteen years old, having opened in 1930, and if you look back at the old history, the opening was a very slow opening with mud in the front, small buildings, a lot of enthusiasm but not many patients, so in the sixteen years, it had been built up tremendously. At that time, the hospital had open wards. We had Howland, Welch, and various other places. The pediatric ward with four cubicles to the room, it was about a 10" X 15" room. So, it was crowded. And we had more patients than we could handle, and there was a lot to do. And the residents were mainly responsible for the patient management. And the faculty had the unique situation of having a private practice which was not the usual custum in most of the

medical centers or universities throughout the country. So, at that time, I was broken into the staff practice, the private practice, the intermingling, and the concept that medicine was primarily for the patient, and not for the faculty. Whereas, other places I had been, it seemed like the faculty were there full time teaching ponderously and various other things. But at Duke the faculty was part of the stream of education, of clinical investigation and of teaching. So, the Division of Orthopedic Surgery at that time, Dr. Shanz had come in 1930, and he left in 1937 to become the Medical Director of the DuPont Institute in Wilmington. Lenox Baker came directly out of his residency in 1937 from Hopkins, and he and Bev Rainey who had been the resident at Duke under Dr. Shanz and had joined the staff in 1936, were the Co-Chairmen. Between the three of them, Dr. Hart who was the Chairman of Surgery, Dr. Baker and Dr. Rainey, the decision was that Dr. Baker who was here on the premises full time, whereas Dr. Rainey was opening an office half-time down town and going to Watts Hospital at that time, that Baker would probably be the one to be the Chief in Orthopedics. That was in 1937. And he appointed a resident a year. And it was during that time, from 1937 to 1946 that he had Julian Jacobs from Nebraska, and he had Chet Waters, and he had Harold Koon, and Howard Shaufle, and individuals who were full year residents from 1937 to 1946. Now, about in 1944, when the war was still going on, Dr. Baker had a connection with the National Foundation for Infintile Paralysis through Basil O'Connor, and he convinced that unit that if we had a training program at Duke where the trainees could learn more about polio myelitis, and at that time polio was still an unsolved problem. There was no vacine available, although they were working on it and we were treating the end result rather than the cause. But if more individuals knew about polio they could do a better job in the epidemics that were occurirng in different parts of the state and different parts of the country. So, he received a couple of hundred thousand dollars in grant funds and he initiated an orthopedic program that included the Shriner's Hospital for Crippled Children in Greenville with Dr. Warren White, the Charlotte Memorial Hospital with Dr. Oscar Miller, the North Carolina Orthopedic Hospital in Gastonia which was solely for Orthopedics, 150 beds, with William Roberts, and Watts Hospital with Everet Bugg who had just come out of the Service in 1946, and the Armed Forces Institute in Washington of Pathology with Lent Johnson, and then DuPont, we had a tentative arrangement with them to send someone because Dr. Shanz had been here and he

knew about us and he was willing to take someone intermittently. So, with those rotations, and the Durham Veterans Administration Hospital, which was not yet built, but potentially, it was on the boards, and it was coming along at that time. So, that was our training program. And the residents would be rotated. We took four residents a year and they would be rotated through some of these Centers. I went to Warm Springs, and then Lincoln Hospital which is a hospital here in Durham, which Dr. Bugg was in charge of. So, our residents rotated through Lincoln, and the Chief Residents rotated through there on a regular basis. So, with that experience, Orthopedics at Duke still had only one faculty member full time, Dr. Baker, with his private practice and his clinical practice, Bev Rainey, half time and no one else, and the Service was growing. So, at that time, Dr. Baker asked me if I would want to stay on the staff. That was in 1949. And we cogitated and looked around and we had some invitations to go to San Francisco which was the same latitude and the same weather, and having been there, we liked San Francisco, but Dr. Baker's offer got better and better as time went on and so, by January, 1949, we decided to stay in Durham, so in July, 1950, I joined the staff as Assistant Professor so that made two full time faculty, and Bev Rainey. Rainey and I shared an office because we did not have a lot of space in those days, so he was there at certain times, and I was there at certain times, and we got along very well. So, the Orthopedic Serice at that time was a Division within the Department of Surgery. There were several divisions. We were busy, but we went to lunch and we met in the dining room, and in 1950, Dean Davison would be there, the various departmental chairmen, Wally Forbus in Pathology, Mrs. Switt from the Department of Anatomy, Joe Marques from Anatomy, Phil Handler from Biochemistry. Those individuals would be there every day. And, we would talk and discuss medical center problems, and mainly it was espris de core. Everyone was a group, everyone's direction was the same, our goal was to help the patients, and let Duke grow. D.T.Smith, in writing a bacteriology book, he did the Zinser Vane Jones book, and the Oklick? was now taken on and I discussed pathology with him, I discussed a bacterial infection I was having, so I had the experts on my left, and the experts on my right, and everyone was in it as a family, so to speak. So, from 1950 to 1960, that is about the way things went.

Let me stop you just a minute and ask you before we leave that period of time, to comment on some of the personalities that you mentioned, beginning with Dr. Deryl Hart.

Dr. Hart was a unique individual in that he had a vision for a medical school and medical center that would include the private practice of medicine, and the ability for the physician to raise funds that could be used for the development of the medical center and clinical research as well as laboratory research. His training had been unique in that he had nine years at Hopkins and Hopkins being a famous place, he was sometimes asked to take over for Dr. Dandy who was a world renown neurosurgeon and when Dandy would leave they would get the resident in general surgery, the ninth year resident, to fill in for Dandy. There were not enough neurosurgeons. The same thing with general surgery. So, Dr. Hart had superb education and superb training, and he was all business. He knew how to laugh and had a good sense of humor, but he was here early, he stayed late. he was well organized, he had a mathematical mind, and I say this in a way that is a compliment to him, everything that he thought of always had a dollar sign attached to it. In other words, how much did it cost? Was the cost benefit worth while. Have we got the funds to spend? And he always balanced his budget. Secondly, he had a unique way of attracting funds to the University. So, he could go out and get grants, and he could get sponsorship for the Markle Fellows and various other individuals. His comment to me when I was asked to join the staff. Goldner, we don't take any assistants in surgery. We take the best people in the world, and the only people we take are the people that could replace the Chairman tomorrow. So, you are not here as an assistant to Dr. Baker. You are here as a member of Orthopedics and Surgery, and you should work toward making it the best Division in the world. And, that was his advice, and that's the advice I took, that's the way we function, and that was his personality. He had a large family. He spent time with his children, I'm not sure when but they all knew and respected him and I got to know each of them individually because of their various fractures and their orthopedic problems, and then, of course, Mrs. Hart was a favorite of mine, and she still is. She worked at Duke during the early days, and after they were married she became the housewife and mother of several children. But, Mary Hart was always smiling, always pleasant, always friendly, paid attention to my family and my wife,

and she still does this to the present time. The other individuals there, Dr. Clarence Gardner, who was the second in the Department of Surgery, was friendly, consciencious, and his contributions were sort of the complement of Dr. Harts. He was the clinical worker, Dr. Hart was the administrator/clinician, sponsoring the research, and Dr. Gardner was getting certain things done. When Dr. Hart stepped down as Departmental Chairman, Dr. Gardner stepped in, having had twenty years of training under Dr. Hart, and he was able to pick it right up without losing a beat, and you could see the protection that he gave to the Department of Surgery during his Chairmanship as well. Dr. Forbus was a very staid, quiet individual who spent much of his career photographing pathology specimens, writing his book called Reaction to Injury, and his whole life went into that book. I knew him as an individual. He encouraged me to come to Pathology for certain research projects that we carried out jointly. He made his facilities available to me, and he was an academician from the word go. However, he was a strong bargainer, because Pathology could not raise the same kind of funds that Surgery could from patient care. So he was always negotiating with the clinicians about contributing clinical funds to the Department of Pathology in order to upgrade. And he would say, "well without pathology you could not do surgery". So, we need 10% of this and 5% of that, and this was going on at the lunch table and in the conferences and various other places. So, Forbus was a tough negotiator and he was able to build that department up. Phil Handler was the young boy on the block who was the brilliant biochemist who, at the age of 27, was the front runner, and we met with him on a weekly basis because he was willing to give lectures to the orthopedic residents on the biochemistry of vitamins and proteins and tissues, and at that time, DNA was just something in the future, and we were just beginning to hear about the various biochemical materials that are now common every day. So, Phil Handler was with us until he actually left here to become the Chairman of the National Academy of Sciences. And then we had Dr. Davison, of course, who was not only a legend, but he was a celebrity on the spot. He never spoke to you but he would have his little book in front of him and he was writing down notes. That is how he remembered. He had an eye/hand note reflex. Anything he ever said, or anything he every talked to you about he wrote in his little book. And, a year later he would remind you of it, or he would say something about it. He got up every morning at 5:00 a.m., and I know this from his son, Bill, who was an orthopedic surgeon. Bill Davison trained

at Duke, and then went on to Michigan where he was in private practice for thirty years, and then he went on to Vermont to a VA Hospital. I knew the Davison family very well, I knew Mrs. Davison, and the daughters, and Bill, in particular, and Dean Davison wrote a note to every member of the staff whenever they did anything. If you published a paper and it was in a journal, he said, "Good job, Goldner, keep going", and so he was always dictating, always writing, always bolstering his faculty. His administration was, what I call, on the hoof. Everything was a bargain, a promise, there were not a lot of letter writings, there were not a lot of contracts. I never got a contract to come to Duke. It was just a shake of the hand and here's your job, do well, and accept whatever pay you get and don't argue about your vacation, and keep going. And that's the way it has always been. But Dean Davison was practical, he was a traveler, probably gone six months of the year, two weeks here, three weeks there, one or two weeks and so on. He liked the Caribbean, he liked St. John and spent a couple of weeks, he would take his Tetracycline and eat anything he wanted. He was a conaseur, he liked good food and he always kept telling you about it. His favorite place in Durham was Josh Turnages, the bar-b-que place, where, whenever we had guests or visitors, he would insist that we go out to Turnages and have bar-b-que. So, all during his time, he was someone that would call you on the phone and say, "Goldner, we are having trouble with instructing the freshmen in certain areas of the anatomy, Marquis needs some help. Why don't you spend the next six months helping them on teaching the extremities. So, that is how we got involved with the anatomy department in orthopedic teaching of the musculoskeletal system and so on. We didn't have to go through a committee, there was not a lot of red tape, he would just pick up the phone and call you, and that was the job and that's the way we got it done. When I needed our first fracture table in 1950, Dr. Baker had a table, a hallic? table from World War I, I guess, I needed a fracture table for things that we were doing that were new and intramedullary nails, and so on. I went to Dr. Baker and said that I we need a fracture table. He said we don't have any money, you don't need it anyhow. But if you can figure out a way to get it, get it. So, I didn't want to do anything without his knowledge, so with that encouragement, and that's about all the encouragement I'd ever get. I went to Ross Porter who was director of the hospital. I said, "Ross, we need a fracture table." He said, "How much is it?". I said, "Probably $4,500". He said, "We are just working on the budget now, let me call Dave". So, he picked up the phone and

called Dave, and he said, "Goldner is here and he needs a fracture table. It's $4,500. and the answer was, "They're going to get exposed to radiation and it's going to be a big problem for them. They shouldn't have that fracture table". So, I said, "Well, let me meet with him and explain it to him". So, I went around to his office, and explained that we had lead aprons and we had shields, and we knew how to take care of the radiation, because they had just been through the atomic bomb, and various other things. So, with that explanation, he called Ross and said, "Okay, give him the money, get the table", and that was the end of it. So, that's how we did business in those days. And, then of course, at 46, Gene Stead came here and Gene Stead was, again, the ideal personality in the medical department, and he was doing his clinical research, primarily. He encouraged people to do laboratory research, and with him at that time, he brought on Jack Meyers, who eventually became Professor in Pittsburgh, and he brought on a couple of other individuals, who stayed here doing superb work for four, five or ten years, and they went on to be Professors in Medicine, elsewhere. And the reason I got to know Gene Stead so well was because my oldest son, Richard and his son, Bill were friends in school. And Richard would go up to Bugs Island, or the lake up near Oxford, and that's where they had Kerr Lake, and the Steads were building a home there, hand made. So, Richard got involved with helping them build their home, so he would spend a lot of weekends up there, and so, little by little my wife and I got to know the Steads, so for the next twenty years we went out there for weekends, we saw them occasionally, we saw them socially, and I watched Dr. Stead develop the Department of Medicine, and I learned a lot from him. In one particular instance, when I had to borrow a bed from him as a faculty member, and I had to borrow a medical bed, how the Chairman of of Medicine got involved, I don't know, but I know the rule was that if you put an Orthopedic patient in a medical bed, the medical house officer had to write the orders. You couldn't write orders on your patient in their bed. He was trying to educate us. Well, that bothered me, because I didn't want to countersign an amateur's orders, and I figured that was red tape, so I said, "I want to see your Chairman", whom I knew, of course. So, they had me see Dr. Stead, and we had a little conference, and I said, "Dr. Stread, this is inappropriate and not ethical for me to put a patient in a medical bed, and have to have you write the orders, you or your surrogate, and me okay them, when I could just write the orders and that would be the end of it." He said, "Well, Leonard, you know we have certain

things we have to do to protect our house officers." I said, "Gene, your house officers don't need protection, you're a bulldog. You're taking care of them but that's my patient and I'm writing the orders on my patient". Well, we shook hands, and that was the end of that. So from then on, we were able to put our patients in medical beds and write the orders. And, of course, we're still good friends. I saw him last week and he's still doing very well.

Let me ask you to reflect on something that I am sure you had to become a member of, which was the Private Diagnostic Clinic.

Well, the Private Diagnostic Clinic was my place of business. And that's where I saw my patients. The unique thing about coming to Duke, rather than say going to Massachusetts General Hospital, was that you built up your own practice, and you came into the clinic, where, at that time, Mr. Raeford, was the Business Manager, and Dr. Hart was the overseer and the Division heads were minimally involved. I would say that this was a benevolent dictatorship in the Department of Surgery at Duke for many, many years. Up until the time that I retired actually, in 1988. In other words, the Chairman set the agenda, the Chairman made the final decisions, and the Chairman would get advice but not necessarily, consent, from the Division Chiefs. And that is not said in a derogatory way or a hostile way, but you asked me how it was, and that's the way it was. And, it's changing, and for twenty years or so, it was acceptable, but, little by little, it became less and less acceptable, as the face of medicine changed, and so on. My first day in the Surgical PDC was like any other day that I had in seeing patients except I had patients assigned to me, whereas, the day before, I had been in the Orthopedic Clinic where they were assigned to the Clinic, and they were on a list, and the resident would see the patient, and the faculty member would consult, and the resident was the patient's doctor, and not the faculty member. But in the Private Diagnostic Clinic, I was the faculty, I was the patient's doctor, they came to see me, I treated them, they had my name and they left seeing me. When I got the feeling that my efforts were being expended on what is called the 'fee for service concept'. Now there are many for, and many against the fee for service concept. The Veterans Administration Hospital is the antithesis of the fee for service. It's all paid for, the patient comes, they get treated, they leave, they don't put out any funds, they don't feel any

responsibility for the cost and the physician over there is paid a salary, so he or she treats the patient however they see fit, and there is no discussion of insurance carrier funding, co-payment or various other things. In the PDC I learned that there is a certain value for your service. and it's mainly time. And time is your most important asset, so having this time paid for by fee for service meant that I had to be more efficient. It wasn't that if I saw more patients, I would get more fees, it was that if I saw an adequate number of patients and I was paid appropriately, I would be able to support myself and contribute to the university. And, that was the nice thing about the PDC, that of every dollar, it was broken down into a percentage that I knew about, I knew where it was going, so a certain percentage went to take care of the clinic, the nurses, the space, the upkeep, a certain percentage went to the Building Fund for the university, another percentage went for a research fund, then a certain amount went for other things that had to do with secretaries and technicians, and so on. So, much of that money that I was earning was going back for the expenses, part of it would come to me, and part of it we could use in the Division to upgrade our research program. So, my experience with the Private Diagnostic Clinic was 1) it was very efficient, 2) it was the best money producing unit at Duke University Hospital and 3) that if you followed this concept of doctor, patient, fee for service, responsibility, incentive, that you built up a very healthy relationship with your patient, or with a third party carrier. So, during that time, it became apparent to me that the cost of medicine can be controlled if we don't let the mechanical parts, the diagnostic parts, and if we don't let the patient get away from the doctor. But what happened in the next 20-30 years, is that the third party inserted, the medical pay, the Blue Cross, the various other groups that dictated the cost, and they were many times accepting large costs for radiation, for x-ray treatments, pathology, etc., and so on, so there is sort of a built in system that adds to the overall cost. Now the Private Diagnostic Clinic proved to me that you can have a private practice of medicine within an academic teaching center, and make it beneficial for the trainees, because the residents went through the private clinic, for the patients, they got good care, and the financial reward to the surgeon could be the equivalent of what the surgeon was doing in private practice in the community but without the satisfaction and without the contributions that academic medicine will give.

Dr. Goldner, can you tell us about the evolution of your research career?

The substance or the essence of orthopedic research at Duke and mine, in particular, was 1) I always had the desire to do research, I had the desire and somewhat of the background to do basic scientific research, but, as time passes, the basic scientific aspect must give way to the clinical aspect. 2) in order to do basic science and research, you need the space, and you need funds, and when I joined the Duke staff in 1946, the Bell Building was here, and Dr. Beard had nine tenths of it, doing his work, and there wasn't really a lot of room for laboratory work. The essence of residency research is to have an ongoing established laboratory into which the resident can be ushered and fit, and moved forward without having to spend months gearing up, instrumenting up, getting the project going, and seeking the funds for the project. That's the essence of research as I saw it, and as I lived through it. Now, in order to conquer that you had to have the simultaneous ability of doing your clinical practice, doing the teaching, and at the same time, working with nothing but developing something as the weeks went by. Now, our nothing? was evident when I joined the staff at Duke. There was no divisional research fund, our only research fund was from the National Foundation which was primarily for stipends and some funds to Dr. Marquis for anatomical studies. So, I looked around in 1949 and I said, "Where can I do my research"? Dr. Forbus said I could go up and use the Pathology laboratory, you could do some night work on various kinds of specimens, you could use our technicians for histological studies. I went to Dr. Handler who said, "Well, in biochemistry, you could have some space here and we could help you with something if you put a resident in for three months". So, I went to each of the basic science departments, in physiology we had something going, and at that time, was able to get a promise from the Chairman to allow them to ask them to put in one of our residents for three months at a time. Now, at that time an orthopedic resident spent six months in Pathology and six months in Anatomy, a whole year of basic science during their training. So, that gave them a chance to do a project. So, our first structured program was in anatomy with Dr. Marquis, and at that time Don Eyler, who was from Nashville, TN, came here for a year for a hand Fellowship in Orthopedics. He was interested in the hand, he was interested in the American Society for Surgery of the Hand, which I was also interested in, and in our poliomyelitis work with the upper extremity, clinical work, we realized that

we needed basic science information on muscle physiology, on force, on physics and various other things related to bioengineering. So, with Dr. Marquis' help, we set up an orthopedic anatomic laboratory in the Anatomy Department. And with the cadavers there for dissection by the students, we had plenty of material. We had cadaver upper extremities. So, we built biomechanical models where you would have the hand with the tendons and a forceplate, and various kinds of transducers that we could pull on the fingers, and test the intrinsic muscles, and we had some complex bioengineering research going on at that time even though it was kitchen table type of equipment. And the other aspect of research in those days, you did not have a lot of complex equipment available. Not only did we not have it, it was not available anywhere, electronic transducers, and so on. About the most complicated thing you could have would be the electrocardiogram, and we made up a muscle functioning unit, which was an analog to the electrocardiogram. So, in those days, as Ivan Brown is rightly saying, I believe, we started out on our own with an amateur type of program. And, we had good basic science research, we weren't just reviewing records, counting patients, looking at clinical stuff, working in the operating room. We were doing all that simultaneously or contemporaneously, so we started the anatomy in 1950, and we got some funds from the National Foundation for this anatomic research. Dr. Otter got the dissecting microscope in anatomy, and he started doing microdissections of the small muscles of the hand, the attachments, and so on, and that was the forerunner of our microdissection in clinical work. Our laboratory that had to do with microsurgery, putting 1 mm vessels together, putting fingers back on and so on. We started in 1950 when we started with the dissecting microscope. So, in the early 50's, we did most of our basic science work in the anatomy laboratories. We also had a resident assigned to Pathology, and during that time, we did some autopsy studies on tumor metastases and orthopedic problems. So, we went through 200 autopsies and we checked the bones and the bone marrow, and various other things, and we did some histologic studies. At the same time, I was continuing with my club foot work, and we had a resident named Darius Flinchem, who has since died, but Darius was consciencious when he was on Pathology for six months, he obtained some stillborn specimens of club feet which were relatively unusual and rare. And we did dissections on those those stillborns, we tested all the tissues, we tested the muscles, we did cross-sections, tensions, and we did some publications, and we determined that club feet

were not just deformed normal feet, that club feet were actually limb blood deficiencies. They started with the wrong? material at age six weeks in utero and they became mature club feet when the baby was borne. So, that was our first work on club feet, and that took the Anatomy Department, it took the Pathology Department, it took basic science sectioning, special stains, cartilage observation, muscle tension, various things that had to do with length tension curves, and the genetic aspects of club feet. So, this was the second factor that we had, with the poliomyelitis muscles and the club foot deformities, and then the pathologic problems that were going on with tumors. Now, during that 50, I was also building up my clinical research, and I started the Duke Hand Center, which was the first formal hand unit in the southeast. And that had to do with hand injuries and hand problems. And, during that first five years, we had large numbers of hand patients who had congenital deformities, clinical problems, trauma, textile mills, various kinds of electrical burns, so we had a massive group of clinical patients and much of that work had never been studied or categorized. So, it was at that time that we got started on our McBee punch cards and the McBee punch card would allow you to punch the diagnosis and the pathology and put it on some spindles, and that was the way we retrieved because our record library was ancient in their abilities to retrieve data, and only during the past few years, and even now, they had such big general diagnoses, that if you wanted to find out something about wrist bones, how many had a fractured scaphoid, you would have to get out all of the fractures of the hand, so you might have to get 500 records, and then go through all those to get down to the thirty that you wanted, and then go through that, so it was a momentous task in order to do clinical research at Duke through the record library. Again, I don't say this in a critical way, it is just a matter of fact that it didn't go and you couldn't make it work. So, we had to set up our own retrieval system. So we had a card file for every fracture. We had a card file for every kind of orthopedic problem. We kept all of our operative notes in anatomic form, like toes, feet, ankles, legs, knees, so when we got ready to review, we could go to those as well as to the record library and we usually picked up another 50% group of patients above what the record library could produce for us because for us because their system was not very good. And, I was on the Record library Committee for years and we finally got something done, but it took a long time. Well, the point is that our evolution as a research unit improved as our funding improved, and we were able to get small

grants from various locations, we had donors, individuals who were giving some funds, so we were able to use those funds to augment what we had in Anatomy, Pathology, Biochemistry, Physiology, but we had no orthopedic space. So, by 1960, we had started the Orthopedic Amputation Clinics. In 1955, New York University came here because of my interest in amputee patients through the war, and they asked us to start a juvenile amputation clinic. So, in 1955, the year that Frank Clippinger was a third year resident, we set up a lower extremity clinic, an upper extremity clinic, and Bert Titus who was in the Orthopedic Orthotics (the brace shop), became a part of that whole system. So, that means that we had to make orthos easier, make articial limbs, have a weekly clinic for the uppers and for the lowers, we had to have a space to do it in. We were still in the old orthopedic clinic at Duke South, and it became apparent that we were going to have to branch out. This brings us up to about 1960 when we were still,-Clippinger joined the staff in 1957, so he was the next person to come on after I was. And he was interested in orthotics and prosthetics, and so he was given the responsibility to continue with me to expand the orthoses in the upper extremity. He was also interested in electrodes, and electricity, and by 1962, we had obtained an electromyogram, which is the equivelent of the electrocardiogram, but you do it for muscle. And Orthopedics at Duke was the first group to have the electromyogram. Neurology didn't have it, Neurosurgery didn't have it, but it was apparent to me, that in handling peripheral nerve injuries, we had to have the electromyogram. So, we purchased this through some clinical funds, Clippinger was put in charge of it, and we started doing electromyography on all the patients with peripheral nerve problems. Now, at that time, Barnes Woodall was a world renowned neurosurgeon on peripheral nerves, and in World War II in Washington he worked on a Clinical Atlas, a Histological Atlas with Lyon, and Hamaker and Woodall did the Clinical Atlas, and he was here as my very close friend and mentor. And, in 1954 or 1955 he said, "Goldner, you do peripheral nerves as well or better than I do, I have got brain tumors and things like that to do, and I am turning my nerves over to you. So, at that time with his blessing, I started treating patients with peripheral nerve problems and our research as evidenced by our writings and so on, went in that direction. Clinical, histologic, biochemical, electronic, and transcutaneous stimulators, and so on. So we had a lot of clinical research going. So, here again, our basic science research was keeping up with our clinical problem. And, we were able to add to this as time

went on. By 1967, we had the Clinical Research Unit #II down there. I think this came up in 1961 or 1962. This was CRI, and then the CRII. We got 800 square feet in CRI. That was our first orthopedic laboratory and it is now down there in the zone just off of Duke South past Ear, Nose and Throat, and Dr. Harrelson has his office there now. and Dr. Scully has his office there now. That was our first orthopedic laboratory and I was doing my club foot dissections, the histologic studies, the muscle studies, and our pathology slides and teaching all came out of that first orthopedic laboratory, 800 square feet. So, that took us up to about 1965. So, in that fifteen years when Dr. Baker was Chairman, I was the Associate Chief, and my assignment had been to build a hand program, which now was fluorishing, and we had at least 2,000 operative cases a year, we had 4,000-5,000 out-patients every year, we had a large center, I was a member of the Hand Society in 1953, Otter had been here, Clippinger was doing hand surgery, so we were the hand center. And I saw in the newspaper recently, that the University of North Carolina had opened up the first hand center in North Carolina. They were ten years after we opened ours when Earl Peacock was there. I only mention that as an aside. But, nevertheless, we were on the forefront of that. In 1962, an arm had been put on at Massachusetts General Hospital. It had been cut off and put back on. Ron Mast was the surgeon then, and Bill Harris who was a close friend of mine was involved in that. The Chinese had done it prior to that in China, but we didn't know a lot about it. And Mast and Harris were known to me, and at that time we started getting interested in microsugery. So, in 1965, we obtained our first Mentor microscope. It was put out by Cobin Shirtlif, and it was a scope that you could attach to the table and it magnified the tissues nine times. So before I used BB loops which were glasses I got from the ophthalmologist, and in doing hand surgery, we didn't have any special instruments in those days, no one made man instruments, so I got the cataract knife from the ophthalmologist, the small forceps, the Edson forceps from plastic and neurosurgery, and I went to all the other services and accumulated the instruments for a hand surgery tray, and that was known as Goldner's hand tray, and we had one in the two operating rooms we had, and when I would post we are going to do a hand case tomorrow, I need the hand tray. And they had it all set up and knew just what was on it. So, that was clinical investi-gation that we did little by little. And with the Hand Service coming along in about 1965, we formed what was called a Replantation Service because we had a

hand to put back on in 1965. And, Barry Heywood, Frank Bassett was here, Barry was a resident, and we tried to get that hand back on and we failed. We just couldn't get the vessels to pump and the blood clotted, so we knew we needed more expertise. So at that time, we started more microvascular work in the laboratory with small animals, and we got a better lens to look through, and then we got the Mentor micro-scope. And, in 1967 with Don Silver in Surgery, we formed the Replantation Team, which means that if any patient comes in with a part off, you call this team, you don't just call the person on call. So, that was our first specialized term in Orthopedics. for subspecialty work. And in 1967 that started. Jim Urbaniak was a resident at that time and I recall vividly when I was working with my BB loops, and doing a hand, and he said, "Dr. Goldner, what do you wear those for", and I said "I wear those for to see. They magnify things, I can see more than my eyes allow me to, and I don't wear glasses", and I say this because he then became interested in microsurgery, and he and his co-workers set up one of the centers for microsurgery in the United States within Duke. So, in 1969, Dr. Urbaniak joined the staff, and in 1970, he was a member of the microvascular team, from that time on he was in charge of microvascular, he and Don Bright, and they moved along in the laboratory. In about 1967, when I took over from Dr. Baker, the Sands Buidling was coming up and we were getting orthopedic research space for the first time. So, at that time, we had three large rooms in the Sands Building and they were the Orthopedic Research Laboratory, and it was apparent that I had to have more money, more space and more people. And that's what makes research. First it's the people, secondly, it's the space, thirdly, it's the money. But they all go simultan-eously. Well, we had been buliding up the funds, so to speak, by our work and our ability to get some grants, and in 1968, I got a grant called The Formation of an Academic Orthopedic Training Program, from the NIH, and I believe that that was $500,000, $100,000 a year for five years. The concept was, and this is the thing I was most interested in, was taking the right resident in his first year and putting the resident into the laboratory one day a week. And, weekends as he could work his time in, and that would give us the built-in capability of raising the resident in the research laboratory. He would be there four years instead of six months, and then out, and never back again. That was general experience. So, John Harrelson was put into that position, and John Harrelson eventually joined the staff, but as a resident, he was a part of the academic orthopedic program in the laboratory. And

John was responsible for starting the Orthopedic Bone Laboratory which is now the Metabolic Bone Laboratory in Medicine. We didn't have space at the time, we didn't have funds, so I called Dr. Sommer in Pathology. I know you are interested in bone. "I have got a bright young resident who is interested? Could you let him work with you and the two of you build up a bone laboratory at the VA, because at the VA, you have got funds, you've got space, you've got the knowledge, and he's got the incentive and the willingness." So, Sommer took John under his wing and between them they started gathering, you have to get a diamond saw that will cut bone without decalcifying it, you have to have ways of massaging bone and scraping it, and polishing it so that you can see the trevecule?, and so on. So, that was beginning of John Harrelson's research experience, and he formed the Bone Laboratory at the VA, he got the procedure started where we study osteoporosis, osteopenia, the biopsies, the Tetracycline, and so on. And then, as he got busier clinically, he gradually turned this over to Mark Dresner, who was a Fellow in Metabolic Medicine, and Ken Lyles who was a Fellow later in Medicine. And as John got busier and busier, he gave up on the bone lab, the Medical Department took it over and that's where it is now. And that's fine. They are working with it. They have added some physical programs to it and so on. But we were responsible for originating the bone lab, if that's of any interest to anyone.

I think it is. Let me be sure I have the dynamics. As you see it, in the forties and fifties, the ideal of basic research and the ideal of clinical research were both present but they were separated by a gap that was basically caused by an absence of resources.

Exactly, in the absence of resources, were space and money.

Okay. Now, as Duke moved into the 1960's, that gap was overcome to the point where equipment and space became available for making connections between the basic science observations that had been made before and the clinical procedures that were ongoing.

As I explained, though, from the fifties to the sixties in Orthopedics, we already went to Anatomy and Pathology, so we were starting the bridge. But it was

a hard gap to jump because I couldn't say with any consistency to John Jones, next year you can go to Biochem, next year you can go to Pathology, you can do this, plus I didnt know if he wanted to do it, if he had the incentive. Whereas, after the sixties, we could appoint members to the resident staff, who said I'm interested in biochemistry, I'm interested in anatomic research, and they would get part of their appointment based on their alleged interest. In 1967, when I became Chairman of Orthopedics, I would choose people, first of all I doubled the number we appointed each year, we went from four to eight, and then I could say to John Jones, "well, you told me you were interested in bioengineering, this next six months you are going to spend in the bioengineering lab. Here is your project, here is your money, here is your space, here is what you can do." So, that was the important bridge from our standpoint. The ability to appoint the people to do it, to have those who wanted to do it, not just a compulsory assignment to the laboratory to do whatever is there to be done. That's what many institutions had then, and have now. So, we were able to bridge that gap. So, I would say, it went from the fifties to the seventies in incremental waves.

What role did the National Institutes of Health, play in all this?

The National Institutes of Health played an important role in our first grant, the Academic Orthopedic Program, because that allowed me to buy equipment that I couldn't have gotten any other way. And so, the NIH, and they now have since then, from 1975 on, funded part of our microvascular laboratory work. So, the NIH played a very important role in what we referred to as basic funds for equipment and for salaries. And, those are the things that are lacking. Because, if you look at any research budget, the highest part of the budget, the greatest costs are the fixed salaries and fringe benefits. So, if you got ten people in your laboratory you got $500,000 in salaries, depending on the level of their training and where they stand, and so on. You can't do that unless you have a practiced plan of clinical work that allows you to take that much money out of your practice plan. We don't have that practice plan at Duke. We had the privilege of using our Divisional funds. In other words, we would earn the money on fee for service, we would put it back in the Department of Surgery, we would get it back as a Divisional fund, without any strings attched. So, we could use some of that, but it was never enough to do all the

teaching, and the travel and the various other things that we had to do. But, the NIH was important as a fundamental support for salaries and equipment, and without that, we would have had a much harder time of making a go of it. Now, the thing that substituted for that, however, was private endowment, and in 1970, Miss Pauline Edwards, of Henderson, North Carolina, came to see me about a hip problem. And she was a very kind woman in her seventies, she taught Latin all of her life, she was well-educated, and she had a mind of her own about what she wanted, and how she wanted it done, and she was altruistic, mainly she wanted something established to remember her brother, Reynold Edwards, Kenneth Reynold Edwards, and I didn't know this until after I treated her hip, but I put in a new total hip for her, and that's when we started doing hips, in 1969 and 1970, and one of the first patients that I treated with a metal-on-metal hip, was Miss Pauline Edwards, and when I finished, she said, Dr. Goldner, I want to reward you somehow, because you have done such a good job with me, and what would you like? I said, "I would like contributions to the orthopedic research at Duke". She said, "Well, in return I would like you to establish something with my brother's name on it. So, I worked around, and we came up with the Kenneth Reynold Edwards Orthopedic Research Fund, and she gave $100,000 to that fund as her first gift. During the next ten years, she gave up to $1,000,000. Now that means that drawing the interest from that at 10%, for example, we would have $100,000, a year for research purposes, and that's all it was used for was research purposes. So, that was our nucleus of orthopedic research outside of the NIH. Now to get $100,000 a year from the NIH would take three years of pilot project studies, several months of grant writing, it has to go through a committee and approval, and frequently it was approved and non-funded, because it was okay but it was not 1.1. So, you don't get it. It seemed to me that since I didn't have ten Ph.D's working in Orthopedics, whereas they had certain areas in the Department of Surgery, and again I say this to Dr. Sabiston's credit, he was able to set up Ph.D's in units that were permanent. And he took residents and teaching Fellows, and put them in the lab for two years, and we had six months with ours, and he was able to build up a foundation with this method that Orthopedics was not able to do because we did not have the funds. Now, here again, that is not a criticism. It's just an observation and a fact that within the Department of Surgery, there were certain benefits that went in certain areas, and we didn't have all the benefits. And, that's an explanation, not a

complaint. So, with that money we were able to do more of our orthopedic research. I hired a PhD in 1970 with some of those funds. The name escapes me at the moment, but I can find it. And, he was interested in red cell hemodynamics and how a red cell goes through a blood vessel and how it deforms, and so on. And I was asking him to use that information and work with us on how nerve cells and nerve fibers grow and develop. That was my main interest, in nerve repair. And how the axons get down to the repair site. So, he said he would work with us on it and he did so for a year or so, but his interests were otherwise, and he eventually left, even though we had set up a very good system for him. That was a disappointment to me, but it was a revelation that you can't get a PhD, who has his own interests, and change his focus, so-to-speak. So, you have to get a PhD in the beginning who has your interests and your focus, and full time able to do this . That is another problem with research in the basic science area and the clinical research. You can't do it all yourself. So, from 1970 to about 1975 with the Sands, we also brought on Anthony Seiber. Now Seiber is not a PhD but he is a knowledgeable individual who worked with Bill Sealy in his laboratory in Thoracic Surgery. Seiber was with Sealy for ten years or so. One day Sealy called me and said, "Leonard, I'm closing up the Orthopedic Lab, and I got Tony Seiber here , and how would you like to take him in your lab? Well, I didn't have the money, but I looked around, we found some funds, and so on, so I hired Tony Seiber at that time. I think that was around 1979. By that time, we had the Sands Building pretty well filled in, we had a PhD. Ben Allen, in 1972, joined the Orthopedic Staff, and he had worked out in Pathology and Biochemistry a model for osteosarcoma, a malignant tumor in rats. So, he was working at this, doing his clinical work and his laboratory work, very high class basic science work. So we had gone from 1950 with an anatomic model in anatomy to 1972 with a animal model in osteosarcoma with burilium as the substance that caused it. And, Ben Allen stayed on the staff for a couple of years, he trained at Duke, and then he decided that there was too much conflict for time. In other words, he wanted to spend more time in the laboratory, and more time on specific clinical work. In other words, he wanted to do pediatric orthopedics. He didn't want to do adult orthopedics. And he wanted to do laboratory work three days a week and clinical work two days a week, plus Saturday, which was three days a week. And I said, Ben, we'll try that. We tried it and he came to me about a year later and said to me, "I can't keep up with the PhD's doing high class research work

and keep up with my clinical work. I have a job offer to go to Galveston, so I think I'm going to go there, where I can do what I want to do in a different kind of way. So, he stopped going to the lab, except as a supervisor, in other words, he wasn't at the bench lab anymore. He was in the lab working with the concepts but he had a PhD working for him. So, that's how the thing changes. And that's the whole pattern of Orthopedic research. Is that you start out with the indivudal on one side who wants to do it himself, or herself, they get to the conflict of clinical work, the laboratory work has to go, from the bench work to the supervisor work, and then eventually, they end up hiring someone for them who can do the bench work, and they can do a cooperative effort. Bob Gaines joined the staff at about the same time and he was doing some work with Dr. Beard on various kinds of cellular work in the laboratory, and the electron microscope, and his work on collagen was good, but he ended up with the same complaint. I don't have time to do the lab work, and do the clinical work, and I like the clinical work better, so I'm going to have to let the lab work go. And, I came into orthopedics to be an orthopedic surgeon, not to be a laboratory clinician. And, that's what really happened. Now, Ivan Brown was unique in this way. Now Ivan did very little clinical work during his 50-60 years at Duke. He did a lot of laboratory work and he did the blood bank and various other things. When he went to Lakeland, Florida, he became a clinician and he was doing cardiac surgery, and he still kept up his clinical research, but he wasn't doing any real basic science work any more. He could go back and forth. But what happened in Lakeland, was that he just had to give it up, because it wasn't available. So, I watched his pattern, I talked to him a couple of months ago, I see him every now and then, and so on. So, that's what happens. So, we had Ben Allen, we had Bob Gaines, Jim Urbaniak was put in charge of the orthopedic research laboratories in 1974 or 1975. And Seiber was there, we had full time people, and now we have several in the lab. Now, there was one other thing I want to point out with interest about research, and that is 1953 when I joined the staff, and we were looking around for pilot projects for the orthopedic residents, here's $1,000, go get two dogs and five rats and work out this project. We didn't have that kind of money. So, four of us, Walter Hoyt, Ned Shutkin, Jack Houston and myself, formed the Piedmont Orthopedic Society. And, the Piedmont Orthopedic Society actually was started in 1951, was incorporated in Tennessee, and the first meeting in 1953, was made up of alumni of the Duke Orthopedic Training Program. So, anyone who had spent a year

at Duke in clinical work, fellowship, training, had credentials to be a member of the Piedmont Orthopedic Society. At the same time I formed the Piedmont Orthopedic Foundation. That means that you can contribute and you can have the funds to give out for research purposes and so on. What has come out of that has been that we have raised enough funds now, so we can give six $5,000 grants annually to the orthopedic residents at Duke. And that's the way the bylaws are written. The membership can only be given to future members of the Piedmont Orthopedic Society which have to be Duke residents. So, now a resident can come to me, to Dr. Urbaniak today and say, "I would like to do a project on this, this and this, and I need that, that and that, and he can write up a protocol, he can send it to the Scientific Committee for the Piedmont Orthopedic Foundation, and if its a good project he'll get his $5,000 in a month, or two weeks, or next week. This has proven to be the most useful resident educational research project mechanism, and that's the thing. It is private money, it's endowed money, and in this instance, it's outside the university. But, it's managed by members of the organization who are alumni of it. So, now we have the Reynold Edwards fund which is inside the university, we have the Piedmont Orthopedic Foundation which is outside, Dr. Baker raised the funds for the Virginia Flowers Baker Professorship, so that's an endowed Chair, and Dr. Urbaniak has that Chair, and the agreement was between Baker and myself, and Urbaniak, that none of those proceeds of the endowed Chair would be used for salary. They would be used only for Orthopedic research. And now we are in the process of raising the funds for the J. Leonard Goldner Chair, which we hope to have completed by the end of this year. And that will be another unit that will allow endowment funds and the proceeds from that will be used for research. So, I would say we have taken all of the things I have mentioned, put emphasis on the people, fertile mind, the incentive, the Private Diagnostic Clinic was important because all doctors at Duke have supported themselves. I don't know if this is realized or not, but Duke University paid me $2,500 for ten years, then the $2,500 went for secretarial help, and they gave me nothing, but I earned through the PDC money and contributed it back to Duke through the Department of Surgery, so that from that I could deduct social security, health care and so on. And Duke University said they would match the funds. They matched the funds with my funds.

Let me go back and pick up something that you said awhile ago. You spoke of Dr. Gardner as Chairman of the Department, protecting the Department. What did you mean by that?

Well, I think that was in 1960-1963. When Dr. Hart became acting President, and then President, Dr. Gardner became Acting Chairman and the Chairman. And it was during those times that Dr. Barnes Woodall was still the Dean, and the activities were something like this. It became apparent that the Surgical Private Diagnostic Clinic was the goose that laid the golden egg. And the funds coming from fee for service were highest in that area of any area in the medical center. This blue book shows that a lot of funds from Surgery went into other departments, other divisions, and the building fund, in particular. So, if a little bit comes out of the department, and helps, then someone sitting up here says, "Well, why not more?." So, there was Dr. Woodall that had been a member of the Private Surgical Clinic since 1937 when he became Dean and saw that there was a shortage of funds, he said, "How about taxing the PDC a little more". That is a natural course, that when you are a citizen, you pay taxes. when you become a Congressman, you tax the citizen so that they pay more taxes. So, at that time there began to be the cry, more money from the clinical departments to support other areas, whether they're welfare funds, or do good funds, building funds, or whatever they are. So, Dr. Gardner at one point, he had to protect the Department of Surgery from all the other groups, the President, the University, the Hospital, everybody in the medical center, various departments that thought that "PDC as Phil Handler put it during one of our lectures when I was a resident, PDC is the gold coast". Well, he said it in a derogatory way, but accepted the money for the Department of Biochemistry when they were low and PDC contributed. So, I think the concept was that the Chairman of Surgery had to protect the surgery department, protect the ability to maintain control of their own funds. During this same time, there was also a vying for space, and when you get a new building like the Sands Building or something else, they would divide it up according to how much money you could contribute for the upkeep. So, Surgery could contribute more and they would get more space, and Medicine would get less, so some of the areas would say, "Well, that's not fair, this ought to be like the United Nations, we all get one vote, we all get one space, we're all friends and brothers, and the surgeons did not feel like friends and brothers,

they felt like they were being imposed upon, so it was up to Dr. Gardner, who was a very emotional protector. And I recall that he had a stroke during the time that he was Chairman, it was temporary, but he had migraine headaches, anyway, which he always had during his whole career, and he told me one day. He said, "Leonard, my migraines are worse these last three years than they have ever been in my whole life." And he did have a small stroke during one of these big episodes when they were arguing among the Department of Surgery, Pediatrics, the hospital and various other places. So, in that respect, I can say in a very superficial way with some depth, and without mentioning specific names, that Dr. Gardner's conflict with the other members of the Departmental Chairmen and the Advisory Committee was very strong. And, during those three or four years, I would say that he was more unhappy than I had ever seen him during our whole career.

The Department of Surgery is unusual in that Dr. Anderson becomes only the fourth Chairman. You have spoken of Dr. Hart and Dr. Gardner , could I get you to comment on Dr. Sabiston as Chairman.

Dr. Sabiston has been extremely productive. He has been thoughtful. He has had an imagination and he has built a foundation for the Department of Surgery, as a group, that will be very difficult to rock. Now, his belief in every other night on for his residents demonstrates his overwhelming compulsion for discipline. Personally, I did not agree with that program. And, I told him this many times and he accepted my comment with a nod, and went about his business as he did it. My objection was based on the life of the resident, the family of the resident, and the other needs of the resident. I had been through every other night on during my residency, not at Duke, but at the University of Nebraska, and I had been through every night on during the navy when I was in, and I know there is a problem with sleep deprivation, and what is now referred to glibly as 'burn-out', and I know that every other night on, in the resident hiarchy, tends to cause it. I only emphasize this or dwell on it slightly, not as a criticism of Dr. Sabiston, but as his way of emphasizeing the need for discipline and orderliness. And, this is the way he was trained at Hopkins, and this the is way Dr. Blalock trained him, and his comment was "If it was good enough for them, it's good enough for me". However, he did bring his residents into the nine year training program, so-to-speak. And, they had

two years of laboratory research. And, if you can get residents who will do that, and who want to do that, then you have what he was able to build up here, as a way of enticing laboratory research funds, because you have experienced individuals, usually after their two years of internship/residency, then they go to the lab for two years, and then they finish up their three years. So, they have had time in there, and with those kind of people working in the lab, with full-time PhD's, and he used the surgery funds to hire these full-time staff, all of us could not do that unless we got extra funds, or we could have used our Divisional funds, so-to-speak to hire the PhD, but we would not have had it for anything else. So, he took advantage of his position, and it was an honest advantage, and he had the advantage, and he made the most of it. And, because of that Program, I am certain that he was able to get the $8,000,000 NIH grants that have come to Duke, and to keep up the cardiovascular research, and to keep each of his faculty members interested in their research, and to make a grant from Duke with Dr. Sabiston's name on it, as an honest, worthwhile, productive unit. He also, was one who protected Surgery. And, he learned this from reading this blue book, and from talking to Dr. Hart, talking to Dr. Gardner and the facts of life, and I know, in the beginning when he came here, he told me he was a little naive, but he became educated very quickly. And, he learned to protect the turf of surgery. In protecting that, he was then able to divide areas in research buildings and so on, among the various divisions, and in his work, he was always trying to be fair and equal, and he looked at the Divisions as equal units, rather than their productivity and their size. In other words, Orthopedics had 32 residents, more than four divisions together. As many as OB-GYN, as many as Pediatrics, and yet we didn't get any more consider-ation within the Department of Surgery, than the group that had six residents. In other words, it was the United Nations type of policy, and I had a feeling of difficulty, I had a difficult time in accepting that. And so, we had to get our outside funds. So, you could say, his attitude about that encouraged me to get outside funds, and that was good. Yes and no, it was good. His devotion to his job is obvious acceptance of his responsibilities, His attitude of fairness among the divisions, and his willingness to fight for the protection of the turf for surgery were all characteristics that were in his favor. And, this of course was recognized by his international recognition, with his honorary degrees, his recognition from various universities, his awards, his positions with the American Board of Surgery, and the Presidency of the Southern

Surgical, and as I introduced him at one of our Wednesday morning conferences, when he was speaking on a particular subject, I introduced him as someone who belonged to many organizatons, and he has been president of each one, which speaks for his abilities, his administrative capabilities, and his devotion to his work. So, I think his presence at Duke during the past thirty years has been one of the reasons why the Department of Surgery has maintained their high caliber. And why the medical center has continued to be international in its scope. His reputation with the NIH continues to be strong and positive, and as long as this concept of maintaining basic science research units within surgery and with each division, I think Duke will continue to grow.

Are there ways that you would contrast surgery as it existed under Dr. Hart and Gardner, with surgery as it exists under Dr. Sabiston. Are those different worlds, or has the one grown out of the other?

Well, I think the old saying: 'I stand on the shoulders of giants', applies here. I think Dr. Harts ingenuity, his origination of the Surgical PDC, his interest in research, I recall that in 1950 I was having a hand exhibit at one of the meetings, and Dr. Baker said that we don't have any money in the Division, so I said I'll go see Dr. Hart. So, I went to see Dr. Hart, and he said how much will this take. I said it would take probably about $500. Well, in 1950 $500 was $5,000, now. And, he said, well, we don't have any money to burn, if you think it's really worth while, we'll scrape it together. The point being that he understood the value of research, he understood the value of clinical work, and he was able to find the money for that particular project. With Dr. Gardner, I did the same thing in 1960, having to have more divisional funds for research, and he eased up on some funds. Then, with Dr. Sabiston, I did the same thing, because I don't have any qualm in saying that the Department of Surgery controlled Orthopedic basic funds, during my whole career as Chief of the Division. If we had our endowment funds, we controlled those. But, not the departmental funds, and so when I wanted to hire a PhD, I would have to go to Dr. Sabiston and ask for the $50,000, and that would be a little different problem. But we worked it out. So, I was able to work out the $500 from Dr. Hart, the 10,000 from Dr. Gardner, and the $50,000 from Dr. Sabiston, or whatever the amounts were, without any difficulty. And why was I able to do it? 1) He understood the

value of work, and 2) I was a worker. So, if you produce, you can ask for something in return for your Division. If you don't produce you're not going to get it. So, I think that has been pretty much Dr. Sabiston's philosophy. I recall when he said to me during a time when we were discussing funding, and I thought we ought to be getting more than we got, and this and that. Leonard, you have always gotten what you asked for. That's true, but it has been a struggle every time I have asked for it. So, I think that's the way he functioned. I was highly satisfied with my relationship with Dr. Sabiston, and I think that in response to your question, his scope, our physical plant, our surgical income, everything expanded like an umbrella from 1964 to 1994. And I think he took advantage of it. It wasn't as if it were automatic, but it was, I would say, predestined. There was only one way for Duke to go, and that was up and out, unless someone catagorically and in a devious way attempted to undermine each department. Now, I did see that for a couple of years, say in Radiology. they had a reversal because of problems with the Departmental Chairman. And as Dr. Anlyan said at that time, "If you get into trouble with a departmental chairman, it takes about ten years to get over it." It's not something you can redo in a day. And Anlyan, incidentally, was one of the reasons that my life at Duke was very happy. Because he came here as my intern when I was on the staff in 1953. He started out as an intern through surgery, so he and I have been close friends, and as he has ascended in the administrative field, and I have ascended in the clinical research field. If I really needed a problem solved, I would pick up the telephone, and I would say, "Bill, this is your boss." Him being my intern, and me being the resident. And, we would discuss it and he would help me solve it. So, over the years, it has been a very happy experience for me, working with the administration at Duke.

Thank you, Dr. Goldner.