HISTORY OF MEDICINE IN OREGON PROJECT

ORAL HISTORY INTERVIEW

WITH

Kenneth C. Swan, M.D.

Interview conducted April 8, 2004

by

George Caspar, M.D.

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Begin Tape 1, Side 1

CASPAR: This is an interview with Dr. Kenneth C. Swan, Oregon Health Science University and Casey Eye Institute. This is recorded on the morning of Thursday, April 8, 2004, at the Oregon Medical Association in Portland, Oregon. The interviewer is Dr. George Caspar, a graduate of the class of '61 at the University of Oregon Medical School. He also served as a resident under Dr. Swan from 1967 to 1970. He practiced ophthalmology in the Portland area for thirty years.

Well, good morning, Dr. Swan. Could you give us some background of your early days, where were you born and when you came to Oregon?

SWAN: Yes. But first, I want to congratulate you on winning the Bruce award of 2003. It was a well-deserved award, because it's given to one alum annually who made major contributions to the University of Oregon Medical School and the area. You have served as president of the Oregon Medical Association, county medical association, the Oregon Ophthalmological Association, and the alumni of the university. That's certainly a wonderful record. Also a senior member of the ophthalmology department.

I want to thank you for your service on the committee which selected Dr. Joe Robertson as the successor to Dr. Fraunfelder. You certainly made a wonderful choice, because Dr. Robertson not only been serving wonderfully in the development of the Casey Eye Institute, he recently has been appointed dean of the school of medicine.

Now back to me. I was born on New Year's Day in 1912 in Kansas City, Missouri. My mother tells me that I was about six or seven years old before I realized that people were celebrating January 1 for a reason other than my birthday.

But I'm really an Oregonian. We moved to Portland in 1913. I had all of my elementary school education in the Portland area, went to two high schools, then attended the University of Oregon at Eugene for three years. At that time, you could take three years on the campus and then have another year at the medical school count as your fourth year. So I entered the University of Oregon Medical School in 1932 and graduated in 1936. During my medical school years, I was very fortunate to have an appointment in the department of pharmacology as a medical student research assistant.

Then I moved on for a year at the University of Wisconsin internship, which was a wonderful year, getting a different perspective on medical education (unclear). Then I returned to my ophthalmology residency at the state university of Iowa in Iowa City for four years, remained for a year on a research fellowship, and then joined the faculty.

I came to Oregon in 1944 as acting chairman of the new department of ophthalmology and then was appointed chairman and full professor in 1945. I served as chairman for thirty-four years, then was succeeded by Dr. Fraunfelder, someone who I'll speak a good deal about later. Dr. Fraunfelder served as chairman till 1998, when he was succeeded by Dr. Joe Robertson, another person who had his training with (unclear). So that brings us up to the present.

I became emeritus last year, which has permitted me to continue in contact with the school. Also, I continue to serve on a volunteer basis as director of the Casey Eye Institute Library, which has been named in my honor. That association has been great for me, because I can read the current literature on ophthalmology, which has tremendous advances that are now taking place. It also helps me to keep in touch with the younger generation and also to keep up with advances in medicine and science. The *New England Journal of Medicine* is particularly valuable in keeping up with the tremendous changes taking place. *Science Journal* and *American Scientist* help me to keep up with what's happening in the general field of science. So I'm fortunate in that respect.

Also, I am beneficiary, as you are, George, of the Oregon Board of Medical Examiners having the classification of emeritus doctor. This permits you and I to continue to see patients on a volunteer basis if we wish to do so, to write prescriptions so long as we don't seek any compensation for it. So this has been a - this category has been a big help in keeping you and I in touch with the general field of medicine. So that brings me up to date, sort of.

CASPAR: When were you first interested in ophthalmology, and what kind of background did you have that may have led you to choose this specialty?

SWAN: Well, first, why I went into medicine: I was impressed, as a youngster and through my teens, by the people who served as our family doctor and (unclear). They stood out in my mind as a young person as truly outstanding people. Kindly, considerate, and always bringing hope and helping us through our problems.

As for ophthalmology, my perspective of ophthalmology goes back a long ways because my father was in the optical business as district manager for Bausch and Lomb, which at that time dealt with the retail provision of eyeglasses and ophthalmology instruments to practicing doctors. So I had some early contact there.

Then, during my high school years, I worked afternoons after school as a messenger delivery of eyeglasses to various doctors' offices, and I had my first perspective of what this field was like. In those days, people were not called ophthalmologists, they were called occulists.

Also, I delivered mainly to offices of optometrists, who provided most of the prescriptions in glasses for the community. There were two types: those who dealt in retail stores, like we now have, and also there was a professional group who had offices in the medical building, seeing patients on a private basis.

And finally, I delivered a lot of glasses in those days to what used to be called general practitioners before we called them family practice, who were in outlying communities where there were neither optometrists nor ophthalmologists. And finally, there was another group that I delivered to, and that was the optician. The opticians in those days were sort of in between the fields. That was my early background with the specialty.

CASPAR: Now, you trained under C. S. O'Brien at the University of Iowa. Tell us something about him, how he influenced you.

SWAN: Well, before I got to Dr. O'Brien I had some other contacts with ophthalmology. When I was accepted to medical school in 1931 for the class of '32, I had the opportunity to work at an optometrist's office. His office was on the mezzanine floor of a department store downtown, then known as Lippman Wolf. Mind you, it was the Depression, and I was lucky to have any kind of work.

My work with him was doing minor repairs on glasses, but also my income was largely from the sale of opera glasses, magnifiers, and tinted lenses. This was my first touch with actually providing service. My major success was in the selling of magnifiers. I learned right then, the first time, how prevalent the need was for these services. There were large numbers of patients that came into that store who were partially sighted and whom the optometrist was unable to correct with conventional glasses. Those were turned over to me to try to sell them the magnifiers. It was a great experience as an introduction to taking care of people.

When I first started to work in that position, I treated people as customers and tried to sell the product, and I had a lot of them return for credit, a lot of dissatisfaction. So that's when I learned you have to listen to people, and when I considered them as patients rather than customers, (unclear). When I found out their needs, then I could be of more help to them.

Also, I found out that - in my experience that people needed to be helped and given instruction. This was my first introduction to the problems you and I have faced in ophthalmology so often, that's patient compliance. People don't comply unless you really give them the proper instructions and encouragement. So that was a really worthwhile experience while it lasted.

Then I entered medical school, and at the end of my second year I was fortunate to work with Dr. Harold B. Meyers, who was then associate dean. Dr. Meyers was truly an outstanding pharmacologist, the leader in the field. My position as a medical student research assistant was to help with his care of his animal work.

He was a leader in two aspects: one was he had discovered that volatile oils like camphor and those oils were effective against fungi, a concept that he developed in the treatment of fungal infection of the fingers in fruit workers. So he was right on the edge of the antibiotic era. He also was a leader in the beginning of hormone therapy. My work with him was to feed the rats whom we were feeding beef testes(?). These were old male rats.

After a period of time, the controls and the rats fed the beef testes were killed, and I weighed the prostates, studied them with the microscope with him.

He also gave me the opportunity to do some research on my own. One of my heroes at that time was Dr. Selling, who was head of neurology. Dr. Selling was especially interested in multiple sclerosis. He encouraged me to do a project in which we studied the level of lipase as an enzyme in the serum. It turned out to be a negative study, but I published a paper on it nevertheless, at his insistence. That opened the door for me to get into ophthalmology research.

At that time, there were only a few drugs which were used effectively; atropine and scopolamine were used, not only in the examination of eyes, but in the treatment of inflammation such as uveitis. But sometimes the dilating of the pupil with those drugs resulted in acute glaucoma, and there were no drugs available that overcame atropine. So I discovered that the pressor principle of the pituitary in the rabbit eye would result in the contraction of the pupil, and it was one of the exciting things in my life, to see that happening.

Then that led me, with Dr. Meyer's help, to work in the eye clinic, which was my first contact, really, with the ophthalmology profession. There, Dr. E. Merle(?) Taylor - who was one of the first ophthalmologists, if not the first, residency-trained ophthalmologists to come to Oregon - was a help in arranging for me to work with patients in the eye clinic.

That's when I made another discovery which was a bit distressing to me at the time. That is that rabbits were rabbits and people were people. The pressor principle of the pituitary which contracted the pupil dramatically in the rabbit didn't penetrate the human cornea enough to be of any value. In fact, when we tried to inject it again, with Dr. Taylor's assistance, the patient started a systemic rise(?). So that ended that dream of developing a new drug, but it encouraged me to go on.

There was a side effect of working with Dr. Meyer, several side effects that were valuable. One was the dollar-a-day, three hundred dollars a month I got from the Rockefeller Foundation, which made me one of the richest people in the class at that time of a deep depression. The next valuable part was that Dr. Meyer was a Wisconsin graduate and had arranged a rotating system with the University of Wisconsin where Oregon graduates did internships there and several came from Wisconsin, came to Oregon. So that's how I ended up as an intern at Wisconsin, with his help.

CASPAR: In what other pharmacological agents did you do research, such as methylcellulose?

SWAN: Well, that came - you mentioned Dr. O'Brien. That came with his - when it came time for Wisconsin, I had to make the decision whether I was going to go into ophthalmology or some other field, and that work with drugs sort of stimulated me toward ophthalmology, because it looked like it had something that many other fields didn't have. In addition to

being both a medical and surgical specialty, the opportunity for research into rapid development was very attractive.

Also, I liked what was happening with what I saw in ophthalmology services at Wisconsin and Oregon, because we could things for people as well as to them, which was one reason I chose between ophthalmology and neurology. In neurology at that time you could make diagnoses, but you couldn't do anything about it, whereas it was thrilling to see someone led in with dense cataracts, helpless, and see what it did to their lives and changed them when they had their vision restored. So that led me to make the final decision.

The choice then was to find a residency. I didn't apply at Oregon because we had really no residency here at that time. There was a year rotation, which was done in conjunction with the otolaryngology department, but we didn't have here - anywhere in the Northwest - a training program in ophthalmology. So I was fortunate to get into Dr. O'Brien's program, which was one of the leading ones in the country. It was the research experience that I had with the pituitary principle and the other drugs that made it possible for me to get an appointment there, which was where I served my residency.

You asked about Dr. O'Brien. He was truly an outstanding leader, not only in ophthalmology, but also in medical education. He set up a program of residency training which became a model across the country.

At that time, training in ophthalmology was generally divided into two components. There were places like the University of Pennsylvania, and also one in New Orleans, where they gave what was called a year of basic training, which was didactic work and observation, and then you went to take a year of practical training in a hospital or a university clinic. Those were truly practical experiences, because they weren't well supervised.

But the system that O'Brien set up was for concurrent education in the basic sciences related to ophthalmology as well as combining with the clinical experiences. And it graduated to the development of responsibility, so as a senior resident you had not only a good basic science background and theoretical background, but the graduated experience in care of patients.

At that time, it was also common for - in some of the Eastern residencies, like Johns Hopkins, to start out with a group of residents and then weed them out so that if you survived the three or four that were competing with you, you got to be senior resident and got to do surgery. With the O'Brien system, everybody who was capable was able to go ahead and complete their training. He was a wonderful leader.

CASPAR: Now, who lured you out to Oregon, or how did you decide to return to Oregon? Who was instrumental in doing that?

SWAN: Well, this is an interesting story. I had two years of ROTC at Oregon, in the university, and then on graduation from medical school I signed up with the reserve, military reserve for the medical corps, and (unclear) usual rank, first lieutenant, and continued in

taking the courses until I was called to active duty in 1971(?). I was unable to pass the physical examination because I was at that time running a low-grade fever and infection, and it was pre-antibiotic days. So I was discharged in November of 1942 and returned back to Iowa as a faculty member.

Actually, my appointment at Iowa was through a grant from - a research grant from the Marko Foundation. The Marko Foundation at that time was just beginning to develop its scholars in medicine program, and they were looking for young people with research training to be able to prepare themselves for academic careers. So that paid part of my salary, and continued to do so when I was appointed to the regular faculty as assistant professor.

Then, in 1944, I received offers - or, opportunities both in New York and at Stanford - Stanford was then at San Francisco - to come there as a physician. So I wrote to Dr. Baird, who had moved up to be dean, and asked for his recommendation. I got back a telegram to wait, that he was coming back to Iowa and wanted to interview me for a possible appointment in Oregon, which was a delightful surprise to me. He came and spent two days in Iowa City, and he and Dr. O'Brien were on the same wavelength, so to speak, so I was invited to come to Oregon as acting chairman of ophthalmology on a trial basis. So that was the beginning of coming back to Oregon.

CASPAR: And then when did your department become a fulltime department of ophthalmology?

SWAN: Well, there's an interesting story there. Dr. Baird, who contributed so much to the development of our school, was truly a visionary. At that time, the University of Oregon School of Medicine was really a branch of the university at Eugene and did not have a direct approach to the board of higher education. At that time, there was practically no research except on a clinical level. Residency (unclear) training was very limited. The department of ophthalmology was - really didn't exist. Dr. Frederick Teal(?) was the professor and chairman. He was a clinical professor. But there was no staff in the department, just a small clinic on the second floor of the outpatient clinic. Patient attendance was about a hundred a month, including free repeat.

What Dr. Baird envisioned - well, I might say more. At that time, the campus consisted of the library and auditorium, which I want to talk to you about later, because ophthalmology played such a key role there.

Dr. Baird envisioned having a faculty which would have some fulltime teachers in the clinical department, a fulltime chairman. At that time, the only fulltime chairmen were in the basic science department: anatomy, physiology, pharmacology, pathology, biochemistry. The clinical departments were all headed by volunteer staff, who did a wonderful job with the limitations they had to work with. Dr. Teal was the first of those volunteer chairmen to retire, so ophthalmology was the first opportunity that Dr. Baird had to appoint a fulltime head of a clinical department. That's where I entered the picture. In 1945, one of the highlights of my life was when I received a telegram from Dr. Baird - I was away at a

meeting - stating that I'd been approved as professor and chairman by the board of higher education. It was the opening of a new world for me.

So that was the beginning of the fulltime clinical faculty chairmen in the medical school.

CASPAR: What was the status of ophthalmology in Oregon, Portland, and the Northwest when you arrived?

SWAN: Well, it's quite a startling contrast to the present. Right now, Oregon is certainly in the forefront with the Casey Eye Institute, but early in the midcentury the whole Northwest lagged behind the rest of the country.

At that time, the University of Oregon Medical School was the only medical school in the Northwestern group of six states. The buildings consisted of the outpatient clinic, Doernbecher Hospital, Mackenzie Hall, and the Emma Jones Nursing Home. But also in 1945, it had two important buildings: the auditorium and the library, which - where ophthalmology played the leading role. The person who was in that role was Dr. Weeks, John Weeks.

But first, in answer to your other question, what was the status of ophthalmology, at first, there were no educational programs other than the one-year practical service. The Oregon Academy of Ophthalmology and Otolaryngology was a combined society at that time. There were no ophthalmology societies per se, because, really, there were no ophthalmologists. The practice of ophthalmology then was - this was eye, ear, nose, and throat territory throughout, but there were large sections of the Northwest where - centers like Bend and Pendleton - where there was no one providing any service in the eye field at all, except general practitioners and optometrists. There was urgent need for training of ophthalmologists to serve the territory.

And, of course, there was no research at that time, either. And the community services, like who was to take care of visually impaired people - rehabilitation programs didn't exist, and there was no vision screening or any of these modern things that are now done as part of ophthalmology.

CASPAR: Who were some of your first faculty appointments and residents?

SWAN: Well, we were very fortunate that way. One of my first plans when I came back was to set up a residency program to meet the need of the territory for more ophthalmologists. That was an urgent need. And it was interesting, as soon as I set up the program, in addition to applicants for the residency there were a surprising number of people in the general practice field who wanted to come in for partial training to learn to do refractions, how to take care of some of the minor things, and how to treat conditions like glaucoma. But I had to make a decision, because we had no sufficient help, to limit our training program to a three-year program of ophthalmology.

??: Doctor, would you like to pause for a second and get a drink of water?

SWAN: Am I getting too monotonous?

??: No, no, no, it sounds like you're getting a little dry in your throat.

SWAN: How about the tone of things?

??: Sounds great.

SWAN: Not too dull?

??: You certainly are (unclear).

CASPAR: You mentioned Dr. John Weeks. Tell us a little bit about the man.

SWAN: I'm delighted to do that, because he was a wonderful person who contributed so much to the advancement of ophthalmology and also of the medical school. Dr. Weeks was - his earlier training and background was in New York, but also he studied in Europe and was a contemporary with Louis Pasteur, actually worked with him and helped him in the discovery of - establish the germ theory of disease.

Dr. Weeks was a codiscoverer with Koch, and, of course, every medical student now knows about Koch and Koch's Postulates. A bacteria was named after him, called the Koch-Weeks bacillus.

[End of Tape 1, Side 1/Tape 1, Side 2]

SWAN: Dr. Weeks was the - discovered - isolated the organism from the (unclear) sac in conjunctivitis.

Dr. Weeks also was a leader in New York - in eastern American ophthalmology. He was a member of the first specialty board in any field, which was ophthalmology, about 1920, and he was a member of that board. He became famous when he treated the king of Siam for cataract surgery, among other things. He retired to Oregon in 1930 when his daughter married Dr. Mount, of the Oregon City family of Mounts, and took up residence at the riverside area along the Willamette River.

He was interested in medical education always, and particularly the status of the medical school. At that time, the medical school's library was on the third floor of Mackenzie Hall, and it was a small space. There used to be a joke there: they had to appoint a small-size librarian to fit the space. Bertha Hallam was a wonderful librarian with very short stature, but loved by all of us because of her help. But Dr. Weeks felt that - and I think I'm quoting him now. He said, "A fine library is a part of every university or any fine medical school."

He also felt that we needed some space for teaching. At that time, the medical school had no auditorium, except the smaller classrooms in Mackenzie Hall. So he was instrumental in helping Dr. Baird, Dean Baird, obtain a grant of a hundred thousand dollars from the Rockefeller Foundation. He matched that with his own money, and Dr. Baird was able to get - I think it was WPA funds. So the present library and auditorium were built just before the beginning of the war. They really should have been named after Dr. Weeks, but he was too modest. He refused to permit that, to do so.

When I came - I knew of him before I came back to Oregon, but when I came back, he was most gracious, and I had some wonderful sessions with him at his home. We talked about the plans for the department, developing the department, also advances in surgery. He delighted in seeing surgical movies, which I had a few at that time that had been held over from Iowa and also that we had made.

He would encourage me in many ways. Among the things that he was in agreement with me on was that we have a residency training program, that the training program should have two major facets: one was the training of people to fill the great need of the Northwest for ophthalmologists; another was to develop faculty as part of the program. So from the very beginning of our department in 1945, the program for residency training had those two components, faculty and practice.

I think you're a good example of the success of the practice group. It's been very satisfying to me, and later to Dr. Fraunfelder and now Dr. Robertson, how well our trainees have contributed to the standard of care in the Northwest in ophthalmology. They've always been leaders in the community.

The faculty program also has been successful, in good part because we've been so fortunate in having good people selected. We've been able to develop our own faculty and also for other institutions.

CASPAR: And how many of your residents went on to become department chairmen?

SWAN: We've produced department chairmen for University of Minnesota, the first one fulltime there; the first fulltime chairman at University of Washington, that's Dr. Kalina; Dr. Burns at the University of Missouri at Columbia; Dr. Fraunfelder at Arkansas, who then came to be chairman at Oregon; and now Dr. Robertson is chairman here at Oregon. Later we had University of Vermont, and the future is good.

Of course, we've developed people for our own faculty, some truly outstanding members, like Dr. Christiansen and Dr. Rich, Dr. Weleber, Palmer; an outstanding group. So that program of faculty development continues, and fortunately we've been able to finance it by contributions from the public. Mr. Stub Stewart, Stub Stewart of Eugene, set up a fund at the Oregon Community Foundation, which is primarily an endowment fund to support faculty development. It contributes significantly, providing funds for new faculty to establish their programs and to survive the early years when they have little income.

CASPAR: Describe some of the research going on at Casey at this time.

SWAN: It's hard to select, because it's so wide.

I might digress a moment here to say one of the differences between - you asked earlier about the differences between ophthalmology now and in the past. In the beginning, before I came here, before the department had organized, there was no research at all. Research is a key part of ophthalmology now during this rapid period of progress. It's what's led to the dramatic developments and increased scope of treatment. Now the research program is really part of ophthalmology. The old definition used to be that ophthalmology was medical practice with treatment of the eye. It still appears in some of the dictionaries, including Steadman. But the fact is that ophthalmology is the study and knowledge of the entire visual system, its abnormalities, its diseases, and its treatment. It also includes the community service part of prevention, rehabilitation, the human part.

So getting back now to your question of what about the Casey Eye Institute, I think the general public doesn't realize how - they realize the importance in the improved scope of treatment, but the magnitude of it. The present Casey Eye Institute Department of Ophthalmology has twenty-seven active grants that I can think of. The support of those in dollars is, I think, for this year seven million dollars in National Eye Institute grants plus another two million in the balance from other sources and foundations, individual donors. So the research budget alone for one year is around nine-, ten million dollars, which does more than bring just advances, it's a real help to the community in terms of economic development. I think the total grants which extend over one period must be close to thirty million dollars now.

Nationwide, research in ophthalmology has developed through sort of a complex, the National Institutes of Health having their own projects supporting research, and the tremendous amount of ophthalmology research going on in the (unclear) of drugs by the various pharmaceutical companies. That's, again, hundreds of millions of dollars, and, finally, the academic institutions like ours and individual, small organizations.

Here in Oregon, for example, the Good Samaritan Devers Institute has a very considerable eye research program also, which brings in new developments and advances at the time they develop rather than dribbling in later from other sections of the country, but also provides personnel.

Incidentally, our department of ophthalmology was one of the first to appoint nonmedical people on the faculty. We had Ph.D.s in the research class in the very early years, as early as the late 1940s.

CASPAR: Do any of these researchers stand out in your mind?

SWAN: They all do, the way they're doing it. It's very exciting what's going on now. To go down the line, in the basic science field - I might say that there's something else special about the research program at Casey. Present under one roof - we have the research laboratory on

the third level, where the basic scientists work side-by-side with the clinicians who are research minded, like Dr. John Morrison (unclear) glaucoma; Dr. Rosenbaum in the uveitis and inflammatory disease.

Right now, the genetics field is wide open and developing. Dr. Mary Wirtz and Dr. Samples have identified two genes related to glaucoma. And, of course, in retina there's a big emphasis on macular degeneration. There's exciting work going on there, too. Tim Sellers organizing the first gene therapy program, at least in the western United States. These are some of the exciting things that are happening on the research end.

??: Doctors, let me interrupt you for a second. We're just hearing some noise outside that we're trying to track down.

[tape stopped]

??: Dr. Caspar, go ahead.

CASPAR: Dr. Swan, let us discuss some of the advances in ophthalmology that you have observed in the past sixty years. Let's start with cornea and external disease.

SWAN: (unclear) is a field that has had tremendous advances. When I first entered the field of ophthalmology, we didn't have antibiotics. We had to depend on agents like boric acid solutions. For the eyelids, yellow oxide of mercury, which really had no any antibacterial effect; sort of acted as an irritant in cleansing. So at that stage of things we had to be extremely careful in our offices and clinics because of the possible transmission of conjunctivitis from one patient to another. We had to make sure the office was a place to help people, the clinic would help people, instead of a place where they could go and contact disease.

There were no - surgery always carried the risk of infection, so the offices and the surgeries were meticulously clean, and rules were followed, like once an instrument was introduced in the eye and withdrawn, it was not put back in again. Some of the treatments that were used for infectious diseases were brutal. People today - we rarely see a virulent corneal ulcer because of antibiotics, but in the thirties, and even in the forties, up to the advent of penicillin and sulfa drugs, the treatment of a corneal ulcer often was cauterizing the edge of the ulcer with actual cautery. Smoke would curl up on the cornea, literally.

A hand - we had to prevent disease, and when we treated it, it was brutal. At that time, trachoma was still evident on some areas of the country. The treatment of trachoma was particularly brutal. We used to use rollers to express the follicles, strip the follicles away. On every treatment table in every office was either a glass burner, Bunsen burner, to sterilize the tips of instruments, or a little alcohol lamp where you dipped your instrument tips.

Our (unclear) was much better than most other fields. In other fields at the time the standard drugs were belladonna and Phenobarbital. Insulin had been discovered then, but

there were few other specific medications. One of the things that attracted me to ophthalmology was we did have some specific therapy, like pilocarpine and physostigmine for the treatment of glaucoma. And atropine was to dilate the pupil for examination and for treatment of uveitis, putting the iris at rest. The principles of treatment of inflammation, what you were taught as a medical student, were still prevalent then. Rest, put the inflamed tissue at rest, and that was done. Otherwise, the treatment was refraction, and the major operative procedure was cataract surgery.

The circumstances under which cataract surgery was done, and the type of surgery, were totally different from today. In those days, sutures were just being introduced to close a cataract wound, so that - and also the type of operation required an incision halfway around the cornea. The operation itself for the cataracts was - it was called the extra (unclear) operation. The cataract surface was opened, and then the contents of the cataract were expressed, and sometimes we irrigated it out or left. But that meant that the - in order to do that, you had to wait till the cataract was far advanced - they used to say ripe - which meant levels dropping as low as 2,200 or less. There was a tremendous amount of older people were running around - they weren't running, because they couldn't see, but had severe impairment of vision, waiting for the cataracts to ripen before they could have the surgery. And they waited until both eyes were involved because of the risk at the time.

So the advent of sutures - well, it also meant, without sutures, that patient had to be very quiet. Hospitalization was commonly four to five days or longer. Then they had to limit activities for a month.

But getting back to the cornea, then, corneal transplantation was a dream which was developing in Europe in the mid-forties, but the first ones done in Oregon were by Dr. Leonard Christensen, who was my first fulltime faculty member following me. He was here on a grant from the Kellogg Foundation. Dr. Harold U'Ren also was involved in some of the earliest surgeries. But the first corneal transplant was done by Dr. Christensen in the early fifties.

Those were days before they had an eye bank. Fortunately, Dr. Christensen's subspecialty was eye pathology. We had set up an eye pathology laboratory with encouragement from Dr. Weeks, who, incidentally, had set up the first eye pathology laboratory in the United States. Dr. Weeks felt we should have a laboratory. Some of the specimens, eyes (unclear) that came to the laboratory Dr. Christensen was able to use as a material for a corneal transplant.

Well, the story then developed where we now have eye banks throughout the world, and corneal transplantations have been advanced to the point where they're highly successful, done under the operating microscope with ultrafine sutures and precision instruments. They use a computer to figure out the proper curve.

In fact, I'd like to talk a little bit about corneal surgery.

CASPAR: Go ahead.

SWAN: The initial indications for corneal surgery were repair after injuries and various inflammations, notably diseases like herpes.

Incidentally, the treatment of herpes in the old days was also brutal. The standard treatment - one of the standard treatments was with an instrument called a thermophore. It was an instrument that depended on the melting temperature - I think it was of thymol. The cornea was anesthetized, and this literal heat was applied directly, after débriding the epithelium. A painful experience for the patient, because it took days for the epithelium to grow back. They had a foreign-body sensation all the time. Brutal.

The next steps in corneal surgery were the development of partial transplants, (unclear). Then, the next stage after that was attempts at implants, which initially failed, but that moved on to treatment with - the laser coming along made a big difference, because it made it possible to change the curvature of the part of the cornea with the laser, which has subsequently been superseded largely by the turning down the flap of the cornea and treating under the - in the middle layer, and returning the flap. This has been wonderful.

As far as other corneal diseases are concerned, there's been great progress. Instead of using a thermophore for herpes we now have specific antiviral drugs, which are quite effective, and we have antibiotics for bacteria infections. So almost no one sees a corneal ulcer anymore that can't be treated effectively. Instead of having perforations of the cornea, we have sight restoration.

Another part of the story - a separate story is that of refractive surgery and treatment of refractions.

CASPAR: Now, much of the surgery requires a microscope. Tell us about your pioneering with the use of the microscope.

SWAN: It came in part when we first started doing surgery on infant eyes. There was an epidemic of rubella with cataract formation, which required precision surgery. We had been doing a great deal of animal work in the laboratory using a dissecting microscope, so that our first step, around 1946-47, was to adapt a laboratory dissecting microscope to the human eye. Then, with the aid of Bausch and Lomb, we had one designed which had an attached illuminating system which could be kept sterile, which Dr. Christensen and I reported to the American Academy of Ophthalmology in 1948. Some of the comments were that we were gilding the lily, but it certainly was not true.

Then, with the aid of the Elks Association, we were able - Bausch and Lomb built a microscope that could be rolled into the operating room, based on that same principle, with a sidearm sterile illuminating system which the surgeon could control. But this was soon superseded by the Zeiss Company building their periaxial illumination, and the microscopes which are based on that principle have been adopted since.

Certainly, microsurgery is now worldwide in multiple fields of medicine, but our 1948 one I think was probably the first.

CASPAR: Now, you also used that for congenital glaucoma.

SWAN: Right.

CASPAR: Tell us about the development of the Swan goniotomy and the lens that you and Heinz Jacob developed.

SWAN: Well, when I came back to Oregon, here in the Northwest congenital glaucoma - which, fortunately, was still rare but still quite a number of patients - meant a lifetime of blindness and discomfort from degenerative changes in the eye. The surgical treatment had been developed and been started initially by the doctors Marcann(?), brothers in San Francisco, which involved a contact lens sitting on the cornea and opening channels inside the front chamber of the eye. But that procedure was not done in the Northwest until after our department developed the techniques.

(unclear) first an improved lens system which permitted us to use a microscope with just a loop magnifier there. That was the Swan-Jacob lens. Heinz Jacob was the optician, German-trained optician, who worked in the department dispensing glasses, but also making instruments.

Then we developed a special knife to use with that lens that could be slipped into the eye with the loss of the fluid chamber. The basic principle was having an unbendable poly shaft, and the cutting part cut just at the tip of the needle, so there was no hook on the edge to catch on the tissue. That was a wonderful development of treatment of congenital glaucoma, because instead of a lifetime of blindness, vision was preserved for a high number of these children. It still is today.

CASPAR: Can you discuss some of the advancements in pediatric ophthalmology that you have observed?

SWAN: Well, we have a very interesting story, because part of the advances in pediatric ophthalmology were not only in the actual treatment, but making treatment available.

In 1944, I wrote a letter to Dr. Baird, which I've just run across the other day, in which I described the situation in the Northwest - several thousand children, many from low-income families who had no access to eye care, children who had crossed eyes and drooped eyelids and other abnormalities - and requested support to set up a children's eye clinic in our department. Dr. Baird helped us by providing us a one-room space up on the fourth floor of the outpatient clinic. It was that clinic that started us in our association with the Elks Association.

Also at that time, there was what amounted to a newly discovered disease process. It was called retrolental fibroplasia. What was happening was, one out of four prematurely-

born children were going blind from the (unclear) process in the back of the eye. They called it retrolental fibroplasias because initially it looked like scar tissue forming behind the lens - lental or lens - but now we know it has to do with the development of the retina and the circulation. It's called retinopathy of prematurity. In the late 1940s, it was still in a research phase. One of the factors that was known to help cause it was excessive use of oxygen.

Well, it so happened that two children of a member of the Oregon State Elks Association in Oregon City, Dr. and Mrs. Robert (unclear), had these twins, whom I saw as patients. They became interested in supporting us and encouraged us to apply for the Elks Association for support. At that time, at the end of World War II, the Elks were looking for a new major state project, and, of course, we were desperately looking for help to get equipment and technical support for our pediatric program. So it was around those two children that we made the contact there.

Then, in January of 1948, I was invited to come before the state Elks Association to present a project. It was a snowy day in Tillamook, Oregon. Also going with me was the head of the blind school at Salem, Mr. Walter Drye(?), who was a great leader in the education of blind children and was famous for his program of getting blind children into public schools.

But anyway, we made a presentation for the midwinter session in Tillamook. Set in the center of the project was a request for money for an oximeter to study oxygen levels in the premature.

Well, it ended up with what we called a Declaration of Interdependence on behalf of these children. The initial grant was given, and in July 1949 we opened the Elks Children's Eye Clinic, the first children's eye clinic per se in a university setup, the first one with support from an external organization within an institution. So it was a pioneer project which didn't look very promising at the time, but has been wonderful. A few years ago, we celebrated the fiftieth anniversary of the Elks' Vision for the Future program.

Over the years, it's involved millions of dollars of support, but, equally important, has been the support in getting the children in for care, participating in vision treating.

[End of Tape 1, Side 2/Tape 2, Side 1]

SWAN: ...for an individual child, which could run a thousand dollars or more. The money was gone forever. The program was that we provided the faculty care and the facility, but they provided for equipment and technical support. So that thousand dollars spent to buy microscope which served thousands of children (unclear) was gone forever. You can believe what happened over the years. Millions of dollars have come in, and we have an Elks Children's Eye Clinic which is one of the best-known and best-rated children's eye clinic centers in the world.

Also, the Elks Association some years ago set up a charitable trust, which is called Elks (unclear) Eye Association. The income from that trust goes to help the blind school

program and also the children's eye clinic at the Casey. There are millions of dollars in that trust now, which assures the protection and help for these children in - well, you might say perpetuity, if I can use that word.

??: I hate to pause at this moment, but we have to change tapes.

[tape stopped]

CASPAR: You've described the Elks as being very beneficial in their money they have given. How else have they played a role at the children's eye clinic?

SWAN: They've helped in their volunteer program, in their visual screening. At the Casey Eye Institute (unclear) volunteers man the information desk at the lower entrance. They're very helpful in encouraging patients and explaining how the system works. Also, they escort patients to and from the surgery to their cars.

They help in other ways, too, in finding and referring in children who need help or families who need help, and also they have been very helpful to us in our veterans program. The Casey Eye Institute is one of the few institutes in the country where a veterans clinic is part of the academic system. The Elks have provided a bunch of the equipment for our veterans eye clinic program and eye surgery.

CASPAR: Now, in the mid-sixties there was the rubella epidemic, and you pioneered various treatments for removal of the congenital cataracts that occurred with children who had the rubella syndrome. Could you describe some of those techniques that you helped devise?

SWAN: The most important was the use of the operating microscope and the development of special knives to pass through the front chamber of the eye and to open the front capsule, and then the introduction of a controlled pressure system of needles which permitted us to wash the cataract remnants out of the front of the eye while maintaining the shape and pressure of the eye at the same time. It was wonderful and reassuring to see the change in those babies with their vision restored.

Recently, I had a very pleasant experience. The Casey Eye Institute received a contribution of two thousand dollars from a family in Colorado. It turned out that the donor was a lady in her fifties on whom I had done successful cataract surgery from congenital cataract when she was a youngster. In fact, she was an infant; she didn't remember the first operation. She still has the visual acuity of 20/30 in her better eye and is expressing her appreciation by continuing support after a half century.

CASPAR: Now, describe some of the changes in glaucoma treatment, surgery, and medical management that you have observed the past sixty years.

SWAN: There have been tremendous changes. Initially, sixty years ago, patients could still have specific treatment with a miotic drug. These are drugs which function for chronic

glaucoma by constricting the pupil and increasing the outflow of fluid from the interior of the eye back into the circulation. But the difficulty with them is in younger people they also change the focus of the eye. In older people, the constriction of the pupil produces handicaps(?) and bent illumination. The eye doesn't exactly go from light to dark nearly as well as if the pupil isn't dilated. The result was not only the use of the drops but the difficulty of having the patient maintain them because of the side effects. That was basically the treatment up until relatively few years ago.

Then the surgical treatment developed back in the early nineteenth century with taking out a piece of the iris, called iridectomy. That was surgery which was prevalent right up until the days of the laser. Now that little opening in the iris is made with a laser without any kind of surgical incision.

But getting back to the drugs, we played somewhat of an important role in that aspect in that around in the early 1950s, Dr. Leonard Christensen, who was at that time associate professor of ophthalmology, started to work with a new class of drugs called adrenergic blocking drugs. These were drugs that antagonized epinephrine and adrenaline, and one of them was a drug called dibenamine. We found from our animal work that they seemed to have a decreased flow of aqueous and lower ocular tension. So we did some studies on patients in the Multnomah County Hospital, giving intravenous injections to patients who came in with acute glaucoma which had been precipitated from dilating the pupil. In some of them a dramatic drop occurred in the pressure.

This was the first time any kind of medication given specifically, other than (unclear) agents, had effectively brought down tension. It opened a whole new era in treatment, because it meant that these drugs, when derivatives were developed that could be given by drops, could be administered without changing the size of the pupil or changing the focus of the eye. They had other side effects, however, but they were minimal compared to those with pilocarpine and esserine. So a whole new area of compliance developed. These are drugs which people can take effectively.

Surgical procedures have advanced further also. The key operation for chronic glaucoma was called a filtration. A small trephine opening was made in the upper part of the eye, under the (unclear) membrane and that allowed fluid to escape under that membrane to control the tension. This was an operation which had a fairly high rate of success but many complications from the (unclear) being too big or too soft or being too thin or just damaged from the operation itself. The newer operations, which preserve the coats of the eye, are much safer and more effective. Also, instead of several pieces of iris being removed, an iridectomy, instead of having to make an incision, reach in with forceps and pull a piece of iris out, the laser makes it possible to make an opening without any opening into the eye itself.

Also, other forms of treatment have been reducing the production of fluid in the eye by treating through the sclera with a laser or other forms of heat therapy, called coagulation treatment. But now the ophthalmologist who has a patient with glaucoma has at least a

dozen alternatives for therapy with various drugs and agents which he can adapt to the patient, which are tolerated well enough that patients can comply with it.

CASPAR: Now, you alluded to side effects from various drugs, both taken topically, on the eye, or systemically. Can you talk about some of these interactions that you have observed.

SWAN: I'm delighted to do that, because Dr. Frederick T. Fraunfelder, who was a trainee and a resident in the 1960s, along with you, Dr. Caspar, has been recognized as the world authority on side effects induced by drugs on the eye. Dr. Fraunfelder finished his training, his residency training, and then had military service and then studied in England and returned - well, his residency also was on our NIH grants for faculty development, so he had some research training at that time. He returned to this country as professor of ophthalmology at the University of Arkansas, where he developed the first fulltime department.

But getting back to the drugs, he had a special interest in the side effects and established a national registry of drug-induced ocular effects. This is the only registry of its type in the world. It's done in conjunction with the Federal Drug Administration and the American Academy of Ophthalmology. Also, along with that he has published a textbook on the subject. He's now been recognized as the world authority on these (unclear) and brought distinction to Oregon and to himself.

CASPAR: Describe some of the improvements in retinal diagnosis and treatment of retinal disorders.

SWAN: Here there have been tremendous advances. When I first started in ophthalmology in the mid-century, we depended largely on the hand ophthalmoscope, which showed only a small part of the fundus. Early, the first camera which permitted better focus and taking of the pictures of the inside of the eye were very cumbersome and ineffective. It was a field in which the artists, medical artists, played an important role. If we wanted a reproduction, they did a painting for us. Before, we'd be looking in a peek at a time with the little ophthalmoscope. But now we have wonderful advances in imaging. Now only can we take conventional color photos of the whole interior, but there's - angiography seems to be the standard one.

By the way, the ophthalmology department was the first in the Northwest to take fundus photos, with a very cumbersome old camera. But now we take phorocine(?), isodrine(?), and tomography, ultrasonography, that show the details of the fundus, cross-section, just as if you were looking through a (unclear) prepared microscope. So the diagnosis has moved on wonderfully well in that aspect, but, also, new techniques have been developed for studying the circulation not only of the retina, but behind it.

Let's have a break. I've lost my voice, here.

[tape stopped]

CASPAR: Discuss the effects of diabetes in the eye and the advances that have been made in treating these complications due to the diabetes.

SWAN: Well, I saw, in the 1930s in medical school, some of the changes in diabetes. Even though insulin had been discovered, diabetic cataracts in young people was still a common development because they didn't know how to control it. But the greater problem down through the years has been diabetic retinopathy. That means damage to the retina in relation to circulatory changes which develop in a high percentage of diabetics, particularly after a decade, and especially in type I diabetes in younger children. It's been found that accurate control reduces these, but they still are a problem. Diabetic retinopathy, which is a result of vascular changes in the retina, has been a major cause of loss of vision.

Fortunately, with the advent of angiography, it's possible to better identify the abnormal circulation and to obliterate some of it with the laser. It manifests itself first by the development of little aneurisms and hemorrhages in the back of the eye and then periphery changes. Sometimes the blood vessels grow forward into the jelly-like fluid called the vitreous, and that leads to connective tissue development and detachment of the retina. But the advent of better diagnosis, and particularly the use of coagulation therapy and treatment with the laser, have preserved vision where formerly it was lost. It was a great advance.

CASPAR: Can you discuss some of the economic advantages with modern cataract surgery and other techniques; the money that has been saved compared to forty, fifty years ago, with increased hospitalizations, et cetera?

SWAN: There are three aspects of the delivery of medical care which are important: one is availability - which means the availability in the territory or in the region in which patients live -of equipment; the second aspect is accessibility, which has been a problem in Oregon, in the earlier years particularly. I think of a patient who lived near Florence, Oregon, who was quite wealthy but went nearly blind from glaucoma because of inability to get to and from the care that was needed in Eugene and Portland.

And the third part is affordability. The focus of the media has been on the increased costs, the increased expense, but in the case of cataract surgery there's an aspect which is very favorable for the patient. First, the technique of surgery has advanced to where the cataract is removed through a small incision.

And incidentally, Oregon ophthalmologists have contributed to the development of these techniques, particularly Howard Fine in Eugene, who is recognized nationally as a leader in the development of the small incision surgery.

But the difference has been this: that whereas in the days of forty years ago where an incision had to be made halfway around the eye and went unsutured in many cases, patients had days of hospitalization and months of disability before they could return to their normal work. The economic costs were enormous.

Not only that, before they even have the surgery they save a good deal of money, because patients used to have to be disabled and have a serious loss of vision in both eyes before the surgery was even undertaken. Now the surgery can be taken as soon as it begins to cause a serious disability, so that they save thousands of dollars in being able to maintain their work schedule and not have to pay for extra care, which is an enormous savings for them. Most cataract surgery now is done in one day and the patient discharged back to outpatient care.

Furthermore, in the early days, after surgery patients had to wear thick lenses, which are expensive and difficult to adjust to, and had to be worn for both eyes to permit the two eyes to work together. Now, with implant surgery, patients leave the hospital on the same day and practically see right away in terms of a few days, which is an enormous saving in their ability to maintain their living standards and earn.

So the overall saving economically, although we can't measure it exactly, is certainly very large.

CASPAR: With the improvement in technology, has this changed the doctor-patient relationship?

SWAN: Not so much that the technology will - technology has advanced the standard of care to such a high degree, and patients feel comfortable knowing they're getting the latest technology (unclear) with the laser. But the part that is most distressing as far as that relationship is increasing use of medical assistants. Patients still want to talk to the doctor, have the doctor listen to them. One of the complaints I get from patients who I've referred away is, "Can you refer me to a doctor who I can talk to or who will see me himself?"

Again, that's outweighed, at least in part, by the talent and ability of the kind of medical assistants we now have, but that has been a problem for some patients, unquestionably. They resent having to fill out a folder - many patients resent having to fill out an inquiry sheet on which they make crosses and checks instead of telling the doctor or his assistant what actually bothers and concerns them. For me, one of the great advantages of ophthalmology has been the close patient association which I've developed over the years, with so many people who still I'm associated with.

CASPAR: Now, who are some of the more interesting patients that you have treated? Do any specific cases stand out in your mind? I'm sure there are many, but if you can recall any specific ones, we'd like to hear.

SWAN: One of them was Mrs. Jenny Weeks, Dr. John Weeks' wife, on whom I performed cataract surgery. She was a lovely, wonderful person and was very helpful to the department and the medical school, because Dr. and Mrs. Weeks gave $200,000 toward the construction of the University Hospital in the early 1950s. That $200,000 was the only private money that went into the construction of the first building of the hospital. It went to build the overpass building between the outpatient clinic and the University Hospital on the tenth floor level.

This was unique in the country at the time, because it used to be that you'd have to have in the hospital ophthalmology equipment and separate equipment, (unclear) lamps and so forth, in the clinic. By having a direct connection between the outpatient clinic and the hospital on the same floor, we could serve both patient populations with the same equipment and the same staff.

Also, Mrs. Weeks later left a contribution which helped us to establish the Johnny Weeks research laboratories on the third floor of the research building. So she stands out as an outstanding example of patient support.

Another one who still is a strong supporter and who served on the Casey Eye Institute Advisory Development Board is L. L. "Stub" Stewart of Eugene. Mr. Stewart and his brothers were cofounders of Bohemia Lumber Company. I saw him as a patient in the late forties, and he and I have been - I've seen him off and on for all these years, more than fifty, and have done surgical procedures. He's been a great supporter of the department and the medical school, having served on the OHSU Foundation, and also has contributed not only financial support but advisory support which has helped us through the maze of red tape, so to speak.

Stub really could be called Mr. Oregon, because he served in the legislature, on the board of higher education, on the Western division of the Federal Reserve, and, of course, he and his brother have helped a great deal with your interest, the Beaver football and athletic programs and forestry programs. He's an example of a great supporter who has contributed in so many different ways.

CASPAR: Speaking of great supporters, tell us a little about the Casey family for which Casey Eye Institute is named.

SWAN: Well, the Casey Eye Institute beginning was when Dr. Fraunfelder succeeded me as chairman of ophthalmology. It was evident then that the department needed to expand to meet its commitments, not only in research but in public service and patient care. A new era was developing in which, instead of - the initial need that we had in the territory was for general ophthalmologists, but the need now is for development of subspecialists. Dr. Fraunfelder carried this as one of his major objectives when he succeeded me.

So we needed room for - not only for pediatrics, which was already separated, but for other fields, too. This involved - first we planned to extend onto the tenth floor of the University Hospital, but then we moved toward setting up a separate institute. Fortunately, with Dr. Fraunfelder carrying the ball, the research to prevent blindness, which is the largest research group, private endowment group, in ophthalmology, picked Oregon to be the seventh of its research institutes that it set up in the country. That was in 1984 and '85. They gave the first grant to set up the fundraising for the project.

Harry Casey was a patient of mine who also had some association with us through the Elks. He was a member of the Portland Elks Lodge and had made contributions to the children's clinic, so he had an introduction. We restored his vision; he had cataracts. He

continued to see. When he visited the Hill, as he called it, he always wanted to see the children's clinic. He loved the children.

Several years into the project development he became interested and made an initial contribution, which eventually reached - along with his sister - $6.25 million to name the new institute in honor of his two brothers, James and George, who were the cofounders of United Parcel Service. So that's how the name Casey Eye Institute developed.

Fortunately, Mr. Casey survived to see it. (unclear), he passed away at age 102, but his family are still participating and supporting. He was a wonderful man, a great storyteller and cheerer-up of people as well.

CASPAR: And how about some of the doctors that you trained? One I recall was a fellow for six months, Richard Raskin, who became somewhat famous after a sex-change operation to become Renée Richards so she could play professional tennis on the women's tour.

SWAN: I never played tennis with him/her, but as a fellow in pediatric ophthalmology he was very effective. He was very manly. He had a sports car, the type that they use for racing. I've forgotten which make it was. He also had a big Airedale that he (unclear) when he came to Oregon. Richard became Renée and was very successful in eastern pediatric ophthalmology and (unclear) work. I've had no contact recently. He/she was a fine pediatric ophthalmologist.

CASPAR: Tell us something about Henry van Dyke and his tutelage under you.

SWAN: Delighted to do so. Dr. van Dyke came to our residency program as sort of a special fellow, because we needed to have someone develop in the field of neuro-ophthalmology, and before he entered ophthalmology he had a background both in neurology and internal medicine. He did some extra work in turning other institutions to establish neuro-ophthalmology as a specialty.

It exemplified what I mentioned earlier about the scope of ophthalmology. The early definitions of ophthalmology were: a specialty, the treatment of the eye and its diseases. But it really is the entire visual system, and here is where neuro-ophthalmology came into play. Dr. van Dyke was a leader in the field early in his career. He was a very dynamic person and a very effective speaker. We lost him to the University of Utah Medical School, where he became the first fulltime chairman of their department there, and then moved later to Louisiana State in New Orleans. He passed away, unfortunately, at an early age of a heart attack.

He stimulated great interest in neuro-ophthalmology in this area, followed up by Dr. Robert Zeller(?) on a volunteer basis. Now Dr. Egan occupies the position at Casey.

CASPAR: Now, how about oculoplastics, some of the research and techniques that have evolved in the past sixty years?

SWAN: Oculoplastic surgery is another example of how the scope of ophthalmology has expanded beyond the eyeball. Here, two Oregonians have been leaders and made significant contributions. The one who stands out, not only for his contributions to oculoplastic surgery, but also as an example for other young people to follow, is Dr. Lester Jones. Dr. Jones was trained in both ophthalmology and otolaryngology, but focused in later years entirely on ophthalmology.

He demonstrated that it is possible for a person to be in private practice, fulltime private practice, and still devote time to education and research, which he did in an outstanding way. He would come up to the medical school and dissect cadavers to study the anatomy and function of the eyelid and of the tear sac system, the lacrimal system, and became a world authority in this field. He developed a technique of inserting glass tubes to replace the obstructed tear sac, and in doing so he restored the normal tear production for the eye. It also reduced the risk of infection generating from obstructed tear sacs.

He developed several techniques for abnormalities of the lid, such as abnormal turning in, entropion. He was truly outstanding, but also he was extremely generous in his teaching time. Young ophthalmologists from all over the country came to work at his clinic. He was generous in teaching them the techniques, taking the time to do that; also to teach at the medical school, where his formal appointment was in otolaryngology, but he contributed a lot to ophthalmology.

His successor and colleague was Dr. John Wobig.

[End of Tape 2, Side 1/Tape 2, Side 2]

SWAN: ...since retired from the Casey, but Wobig has contributed also significantly. He has a national reputation.

Another practicing physician who was associated with the Devers Clinic at Good Samaritan Hospital was Dr. Merrill Ray. He worked with Dr. Jones on several eyelid projects also. Now, the chair of oculoplastic surgery at the Casey is held by another one of our trainees, Dr. Roger Dailey. Roger holds the Lester T. Jones professorship, which was established in part by the Jones family. He is also making a significant contribution and has taken on an associate, Dr. Ng.

CASPAR: Could you discuss William Zimmerman and Gwynn Dockery, how they played a role upon your arrival to take over the departmentship?

SWAN: Bill Zimmerman was the administrator of the working -really, the business end of the medical school under Dr. Dean Baird. He was a tremendous help in getting the department organized and in the financing.

Gwynn Dockery, Gwynn Brice Dockery, was head of the outpatient clinic and was very helpful in the organization of flow of patients. I continued to work with her for many years and recently talked to her in retirement. In those days, the flow of patients was largely

from the indigent population, but she was very helpful in setting up the patient referral system of private patients for the first time.

CASPAR: You've mentioned Dr. Larry Rich, who heads the corneal service, and Dr. Richard Weleber, who's done basic work in ocular genetics. Do you have any additional comments to make about either one of these?

SWAN: I'm glad to talk about those two, because both of them have made outstanding contributions and have been leaders in their field. Both of them were medical students here and worked in the department as medical students. We established early in the development of the department a medical student research assistantship, which is financed in part by donation, largely by donation. Dr. Rich worked with Dr. Robert Burns as a medical student on several projects. Dr. Weleber was interested in genetics and worked early in genetics in other departments as well as ours. Because of a National Institutes of Health grant, it was possible for them to leave for a fellowship, Dr. Weleber in genetics, Dr. Rich in corneal diseases.

Dr. Rich took over from Dr. Christensen in our corneal surgery program and was the first to - has been a leader in laser surgery. He was the first to use a laser in the Northwest and has continuously stayed ahead. Thousands of laser procedures have been done under his direction.

Dr. Weleber really established the first ocular genetics program on the West Coast and still is a leader in the field. It's becoming increasingly important now to identify the carriers of disease for specific eye diseases because inherited eye disease is a very important field in pediatric ophthalmology. This was the first ocular genetics clinic in the Northwest.

Both of them, fortunately, are carrying on.

CASPAR: Discuss the role of the Veterans Hospital in the training and research.

SWAN: It's been a very important one for ophthalmology. Initially, when I first came back, we had a shortage of patients for training. Our patients - for surgery training, in particular, because before the University Hospital was constructed the only adult patients we could operate on were indigent patients from Multnomah County. Then, with the advent of the Veterans Hospital, we were able to practically double the number of patients whom we took care of. It was a wonderful experience for the residents and fellows, and particularly valuable for the veterans themselves because of the increased quality of care.

I was privileged to serve on the dean's committee, which played a part in the initial transfer of care to us. The ophthalmology department has totally provided the staff for the eye service there since that time, more than twenty years ago. We've also increased research space, which is badly needed.

CASPAR: You mentioned Dr. Charles Holman. Can you describe the role he played?

SWAN: Dr. Holman was a classmate of mine, and he played a very important role for me, because in the last two years of medical school I rode in a carpool with him in his Ford. He picked me up. Also, he sometimes picked up a lady in the neighborhood, whose name was Virginia, and she was studying medical technology at the medical school. The first thing I knew, I started dating her, and sixty-four years ago I married her, or she married me. We've lived happily ever after. So Charles Holman was sort of a matchmaker there.

He went on, after his internship, to become an assistant administrator of the hospital system under Dean Baird, and, of course, later on became dean as the successor to Dr. Baird. A wonderful person, very stable, very considerate, and able to listen to people and make good judgment. He was a very diplomatic person, as well as a very efficient one. It was a time of difficult - it was when there were some town-gown struggles relative to the new hospital, but he managed very well.

CASPAR: Now, you published, I think, over a hundred and fifty papers and contributed chapters in textbooks of ophthalmology. What would you consider one of your major contributions that you would most want to be remembered for? That's a tough one, I think.

SWAN: I guess I don't think that way, which is best and which is worst in time. The memorable one was...

??: We may have to pause here for just a second.

CASPAR: We've got some outdoor competition.

??: There are some things that I'd like to still hear tackled, but they're almost nonmedical entirely.

SWAN: What are they?

??: I'd like to know a little bit more about - you know, in all due time, whenever the time is right. I'd like to know more about your early childhood and your impressions of the doctor who came to your house to treat you and your family, and a little bit more about what it was like for you as a child to see a doctor in those early days of the thirties.

CASPAR: Did you have much contact?

SWAN: (unclear) stimulated me a good deal to get into medicine.

??: And then, I'd also like to know a little bit more about - you had mentioned a minute ago some of the town-gown things, but I think, George, you still have that on your list of things you want to talk about.

CASPAR: Well, I can say, you know, how were you accepted when you came to town, and were there any conflicts, or something.

??: Yes.

CASPAR: I've got some of your publications. Could you just highlight a few of your landmark findings and publications?

SWAN: Well, my initial work was pharmacology related because of the experience I had with Dr. Meyers in the department here. When I got to Iowa, Dr. O'Brien encouraged me to continue in that field. One of my first projects was to study the effect of drugs on the flow of blood and the circulation inside the eye. This depended on the development of angiography. We were the first to photograph in movies the appearance of fluorescein in the eye of a rabbit after it had been injected intravenously and found out that the drugs needed in the treatment of glaucoma and the treatment of inflammation, like atropine, altered that flow significantly.

That paper I presented before the Association for Research in Ophthalmology and won the prize as the best paper. It was a wonderful thing for me, because our first son had just been born and I was faced with a hospital bill. The prize was for a hundred dollars, which paid for his hospital bill. That event particularly stands out in my mind.

CASPAR: What year was that?

SWAN: I guess that was about 1940. It was 1940, right.

The next development which particularly was a highlight was, I was interested in the mechanism of action of drugs and had a thought that - of what's called inhibitory analogue. A drug structure could be modified so that it blocked out the normal acting physiologic substance; therefore, it either had a stimulatory or inhibitory effect.

So with the help of a graduate student in biochemistry, we set out to modify the structure of acetylcholine, which is one of the great neurotransmitters in our bodies on the autonomic system. We changed the physical properties by adding - increasing carbon groups. A great moment in my life was the day we built a compound that, when we put it in the rabbit's eye, produced - instead of a constriction of the pupil, which acetylcholine does, produced a dilation. This was the first synthetic new drug to replace atropine and scopolamine with whole(?) atropine, which would dilate the pupil and put the focusing muscle of the eye at rest.

This was a thrilling moment in life for me. We went on to develop a compound called debutylene(?), which was used temporarily but didn't penetrate the cornea as well. So practically all of the short-acting drugs now used for examination of the eye, like - not medriacile(?), but the related drugs are derivatives of the Swan-White - White was the name of the biochemist. He later went to work in a company in Rahway, New Jersey.

In those days, it was unethical for a doctor to profit in any way from drugs, from things like that, so although we were able to patent the process, we never patented the drug itself. If we had, our problems of financing the Casey Eye Institute, we wouldn't have needed Mr. Casey. But I feel a great satisfaction on that work.

The second development that was thrilling for me in the drug field was developing an artificial tear. We didn't do the research to develop a tear per se, but as a means of facilitating examination of the eye by getting a clear liquid to lubricate the cornea while a contact lens was put in place.

I read in the *Chemical Journal* about a substance called methylcellulose, which produced a clear solution. I sent away to Dow for it and received a big container. I must have gotten five gallons. I opened it and saw this fluffy stuff and I thought that was packing at first, but it was the main substance. We found that when we heated it in solution with water, then when it cooled, then, it became a clear visage solution which was nonirritating, nonabsorbed, and provided an ideal cushion to put a contact lens on for examination.

That was the beginning of methylcellulose. Again, we didn't capitalize on it commercially because of the ethics of the time, but it became a vehicle for drugs and artificial tear. There have been some substitutes for it, but it's still widely used. Also, methylcellulose went on to be used to give bulk to ice cream and all kinds of other things. But as far as I'm concerned, it's the eye use. That was very satisfying to do that and see it's still being used.

CASPAR: Now, you gave many guest lectures in honor of previous ophthalmologists and won multiple medals throughout your career. Could you discuss one or two of those that were most satisfying for you?

SWAN: The first one, the Proctor Research medal, was awarded by the Association for Research in Ophthalmology, and I was the fourth recipient to receive that, and that was primarily for my work with the drug substitutes for atropine and scopolamine. That medal is very memorable for me for the reason I know some of the other recipients and feel honored to be even in the same group with them. That sounds like false modesty, but I feel that way.

Another circumstance which was a high point in my life was when I was invited to give the first Proctor lecture at the department of ophthalmology at the University of California in San Francisco. There I talked about the corneal drugs and the new drugs that affected the cornea. That stands out for other reasons, because it established a working association between our department in Portland and the department in San Francisco, which has lasted up until recent years.

CASPAR: When you came to town in the mid-forties, how were you received by the few ophthalmologists in town? And because you were on the Hill full time, was there any town-gown clash that existed?

SWAN: There was considerable concern about the direction in which Dr. Baird was taking the school. First, he made breaks with tradition, one of which was the building of a university hospital system. Dr. Baird felt that we would not be able to progress as a school of medicine unless we had a wider range and scope of patient.

As I said earlier, into Doernbecher Hospital we could admit patients of all classes, and did. The staff there was almost entirely volunteer people who charged a fee for those able to pay. I was permitted to do that beginning in the fall of '44. But for older patients for the residents to train with, we had outpatients from all over the state who were indigent. But an indigent patient, unless they lived in Multnomah County, could not be hospitalized on the Hill, which produced a critical shortage of particularly the middle-aged group, which would provide the largest volume of patients in private practice.

There was considerable feeling against starting to change to take paying patients into the hospital, which traditionally had been - to the medical school, which traditionally always had been indigent patients. But, fortunately, there was also an opposing body, mainly of people trained in the Midwest and East who saw Dr. Baird's point of view. One of those was Dr. Joseph Paca(?), in internal medicine, who's been a great supporter of the department up until his death just a few months ago. He worked hard to persuade others in the community that this was the right way to go. There was also a considerable other following.

My predecessor as head of the department, Dr. Frederick Teal, was a fine gentleman who was very helpful and very understanding of my point of view. He treated me very well, better than I probably treated him. He also felt that this was the wrong direction, but, nevertheless, helped me along the way and kindly offered me an opportunity to work in his office, which, in retrospect, was very generous.

But there were others who felt strongly against ever moving into paying patients, because they feared we'd develop a Mayo Clinic or something like that. By contrast, now practically everyone on the faculty has had residency training, and by faculty I mean the whole school. So this has disappeared entirely, this feeling.

Also, there was some feeling against the residency program. There were some people in the eye, ear, nose, and throat field particularly who felt they already had too many ophthalmologists and shouldn't have any more. That feeling has carried on even to modern times, but now it's no longer so because we now have - at the latest count of the Oregon Academy of Ophthalmology, there are 218 ophthalmologists who are members of the society, and there are probably a number of ophthalmologists in Oregon who don't belong to the society.

CASPAR: Tell us a little more about Leonard Christensen, your first fulltime hire.

SWAN: Leonard Christensen was a major contributor to ophthalmology in the Northwest. He came out of the military training and entered the residency in the late forties. During the residency, he did some work in biochemistry and received his master's degree on his research there with Dr. West. He was a student within a student as a resident.

He had a special interest in eye pathology, so when he finished his three years, we were able to get a fellowship for him to have a year of eye pathology; six months at the University of Chicago and six months at the Columbia University Eye Institute in New York. He returned with training in eye pathology to set up - and Dr. Weeks loved him for this, too -

set up an eye pathology lab in Oregon, which was the first one and which some major contributions came from, one of which is interesting now, in retrospect.

Early in his setting up of the lab, he did a postmortem study on eyes of an infant who died and demonstrated in the eye the organism of (unclear) disease. At that time, (unclear) disease was a rarity, nobody considered it of any importance, and now it's a major cause of blindness in patients with AIDS. Interestingly enough, another member of our faculty, Robert Burns, was the first to describe the disease in proven cases in the eye, clinical appearance.

But, getting back to Dr. Christensen, he returned from his fellowship and immediately set up the lab and also started his work on the cornea using specimens, denucleated eyes, as the source of material for the transplant. He continued to contribute throughout the years to that and became the leading corneal surgeon in the Northwest. He also helped me a great deal in the surgical training, particularly of patients at the Veterans Hospital.

After I had been appointed to be the first Oregonian to be on the American Board of Ophthalmology, Dr. Christensen replaced me on that appointment, the first of six people we've had appointed to that board. His work and surgery extended to other fields. He was very innovative, creating a number of operations, including corneoscleral transplants. He passed away just a couple years ago. He was a wonderful man. His daughter now is on our staff in pediatric ophthalmology.

??: Would you like to take a sip of water, Doctor? You're sounding a little dry.

[tape stopped]

CASPAR: Tell us a little more about your second hire on the faculty, John Harris.

SWAN: Dr. Harris and I had a long association. When I was resident in ophthalmology at Iowa, he was working for his degree in biochemistry. His laboratory was just down the hall from mine, so we often collaborated and had social gatherings. Then, when my chief in Iowa finally allowed me to get married in my second year, my wife, Virginia, worked in - who had been trained in medical technology, worked in the same laboratory with Dr. Harris.

He distinguished himself at an early age for his work in blood preservation; in fact, he won a medal on that aspect. But then he went into military service in World War II, and in the service decided he wanted a medical degree to expand the scope of his work. So when he contacted me, we helped him get into our medical school to get his M.D. degree and work in the department in the research phase at the same time. He had a Ph.D. at that time, one of two in the medical school student body.

Dr. Harris' work was, of course, in biochemistry, on formation of the aqueous and the flow of fluids in the eye. By the time he was a graduate student, he presented a paper at the Association for Research in Ophthalmology, which won him what was called the Friedenwald award. The Friedenwald award was for young investigators who did

outstanding research of the year. He then returned back to service through the residency program, but in 1957 the University of Minnesota hired him away from us to start a fulltime department there, where he distinguished himself again in setting up a full department with outstanding research. He was appointed to the National Institutes of Health; two advisory councils, neurological disease and blindness; and also he was a charter member of the National Eye Institute. He retired recently and recently passed away.

He made a significant contribution to the research programs of our department, particularly with - because of his previous work in biochemistry, our relationship with the basic science department was enhanced. We participated in the training of basic sciences with those departments. It was a big step ahead. He left a major contribution.

CASPAR: Let us go back to your arrival in Portland from Kansas City in the mid teens of the twentieth century, your impressions and childhood recollections, exposure to any physicians of the time.

SWAN: My first exposures were with the family doctor. I especially remember when my sister developed now what is recognized as (unclear) cellulitis. The doctor made multiple visits to the house after he did the surgical drainage. I was so impressed by how kind he was and how considerate he was, and he would take the time, and he encouraged the rest of the family that our sister was going to recover. Then, there were several other doctors, and one of them was the family surgeon who did gallbladder surgery on my mother and reset my broken arm and helped my sisters through various (unclear) tonsils and adenoids, even though he was not an ENT man. He also impressed me as - I looked at him with awe. He was so dignified and yet so friendly, and he seemed so knowledgeable and seemed so - well, he was just someone that a young boy would want to emulate.

CASPAR: In what part of Portland did you live when you came to Portland?

SWAN: First we lived out in Montavilla, where my father was (unclear) opening a new location, and then we moved out to the Creston district, where I saw my mother very active in community affairs. Then, the last two years in elementary school we lived on some acreage out in east Multnomah County, where I got a taste of country life, and also of country school. I did well in that country school in seventh and eighth grade except in the field of agriculture. The other students, who'd been raised in the field and had six years of it, had a considerable advantage. I couldn't tell one pig from another. Anyway, I got a fine education and then went on to Franklin High School and Washington High School.

In high school, I worked half-time during my third and fourth years in the business my father was in downtown, delivering the glasses, where I got another insight as to various levels of professional...

[End of Interview]