

**DR. FRANK B. JOHNSON**  
**ARMED FORCES INSTITUTE OF PATHOLOGY**  
**ORAL HISTORY PROGRAM**

SUBJECT: Dr. Frank B. Johnson  
INTERVIEWER: Charles Stuart Kennedy  
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*Q: Good morning, Dr. Johnson.*

**DR. JOHNSON:** Morning!

*Q: Dr. Johnson, I wonder, could you give me something of your background; first, the date when you were born, where you were born, and then something about your early years where you grew up.*

**DR. JOHNSON:** I was born in Washington, D.C., the 1st of February, 1919. The first, earliest recollections of the childhood are...I can't really say much about it. I had a normal childhood. I grew up in the Dupont Circle area of Washington, D.C., and on many occasions would go to the old Army Medical Museum, where I first became acquainted with what's now the AFIP. It was fascinating to me; I never imagined coming here to work one day. I attended the usual grade schools. My elementary school was the Sumner-Magruder School, which is now preserved as a sort of a memorial or monument downtown. It's near the Geographic building. It's very handsome.

*Q: Yes, a beautiful, beautiful building on...*

**DR. JOHNSON:** Seventeenth and M Streets. Many pleasant days in that school. Particularly enjoyed the carpentry shop there. The other great thing about going to that school was, when I got to the upper part of the elementary level, my mother would give me a letter to the teacher to allow me to go the public library once every two weeks. Just down the street, the great ... Library. It was a wonderful, wonderful experience. So by the time I finished elementary school I had read all the books on chemistry in that library. There weren't a lot of books, but I read them all.

*Q: Well, tell me, what attracted you towards chemistry?*

**DR. JOHNSON:** I've always had a fascination with chemistry; I don't know what attracted me to it. I have a brother who was interested initially in aeronautics. I was interested in chemistry. And so we sort of combined our talents occasionally by making little things that could fly around.

*Q: Did you get one of those sets with test tubes and different things that you could use to*

*make stink bombs?*

**DR. JOHNSON:** Yes, sure, I started off with a Chemcraft set, I think it was called.

*Q: Chemcraft, that's right, yes.*

**DR. JOHNSON:** But later I started getting my own apparatus from Gilman's drugstore, chemicals and apparatus. Gilman's drugstore was down on Pennsylvania Avenue, 7th and Pennsylvania, where you could get all sorts of chemicals. And my mother would have to, of course, sign a little statement that I was going to use these responsibly. Also got, sometimes, chemicals from Howard University or other places, when people would let me have them. And I recall my mother saying, "Please move your laboratory to the back of the basement. I don't want the front of the house blown up."

The first mushroom cloud I ever saw was one I made myself. I had no idea of the magnitude of this happening. I mixed ammonium nitrate and aluminum together. And if you add water to that, you get a spontaneous reaction. I had a very large amount, apparently, and when I put the water on it, it just went whoosh! A big cloud went all the way up to the top of the house, a three-story house, and then dissipated. I don't think any neighbors saw this, but I was pretty excited when it happened.

I've always had an interest in chemistry. I was fortunate when I got to high school, I went to Dunbar High School, and I had a very excellent chemistry teacher, a Mr. Cowan. He gave me every encouragement, and I often spent many hours, in addition to the usual day studies, in the lab.

*Q: I was going to ask. I mean, coming there in high school, you must have been miles ahead of the normal chemistry student, weren't you?*

**DR. JOHNSON:** I suppose I was a little ahead. I didn't understand all that I had read, but I had certainly read a lot.

Another important influence on me in Washington was the Bureau of Standards, where I would visit occasionally to see what was going on. I'd just walk into a laboratory and say, "Well, do you have anything of interest to a visitor?" And it was well received and I had a lot of interesting insights into a government chemical operation.

Also, an important influence on me was the Library of Congress, which in those days high school students could utilize the facilities. Did my reading there. In fact, our school was well known as a very good academic school. The frontispiece of our yearbook the year I graduated was the Library of Congress, we thought so much of it; all of us loved the Library of Congress.

Parenthetically, another of my loves in that same area was the Folger Shakespearean Library. I was never a good Shakespearean scholar in school; I didn't really care much for Shakespeare, but somehow I liked that Folger Shakespearean Library.

*Q: Well, and also the theater, too, was very dramatic.*

**DR. JOHNSON:** Wonderful, yes, very excellent setting. I was shocked in the last couple of years to go down to see the Folger Shakespearean Library to see Puck's arm had been broken off by some vandal. You know the statue of Puck with "What fools these mortals be," someone broke one arm. I keep going back by there to see if they've replaced that arm; I hope they do.

*Q: Well, then, you finished high school about when?*

**DR. JOHNSON:** Nineteen thirty-six I finished high school.

*Q: Still good and solidly in the Depression at that point.*

**DR. JOHNSON:** Oh, I was never conscious of a Depression. I suppose I should have been, but my mother ran a gift and art shop on U Street, which was a thriving thoroughfare in those days, and she did very well. My Dad helped her. He was a railway mail clerk, and he would run on a railroad one week, and then he'd come back and help Mother on another time. So we were comfortable.

*Q: So what did you do after you got out of high school?*

**DR. JOHNSON:** I went to the University of Michigan. I had a lot of debate where I wanted to go. I was thinking about Cornell and Harvard, and somehow I decided that Michigan was the place for me. And I was glad that I went there.

*Q: I assume you were still keeping on with the idea of chemistry.*

**DR. JOHNSON:** Chemistry, yes, yes.

*Q: Were there any lights in the chemistry world at that time at the University of Michigan that attracted you?*

**DR. JOHNSON:** Almost every member of the faculty was an outstanding individual, especially my teacher in analytical chemistry. Dr. Willard, I thought, was one of the world's greatest analytical chemists. At one time, I wanted to be an analytical chemist myself.

*Q: At the University of Michigan, did you have any choices as far as fields of chemistry?*

**DR. JOHNSON:** No, the undergraduate curriculum in chemistry was a broad one and prescribed; all of the courses were prescribed, except there were a few electives in some other subjects, some anthropology and philosophy to round out things. The chemistry

courses were prescribed.

The chemistry requirements for an undergraduate degree were identical with the requirements for a master's degree in chemistry, so thus when I finished my undergraduate chemistry, I had all the prerequisites, I guess, for a master's degree in chemistry. At that time, I was thinking about graduate school and getting a doctor's degree eventually, but I was told by the professor of biochemistry that there was no room for me. He said, "Johnson, we have two chemists. We have one at Howard, and we have one at Mehorry. We don't need any more. There's no hope for you; there's no place for you to go." That was his advice. I thought it was really poor advice, but that was his attitude.

So at the time I was a little discouraged. I said, well, I'll go to medical school and get a little background, I'll hit biochemistry again. I enrolled at Howard University Medical School and was going to take a couple of years, but then the war came along and I was locked into medical school. I finished the last year under the Army specialized training program.

*Q: So you were taking medicine at Howard as part of the Army.*

**DR. JOHNSON:** Yes.

*Q: When did you get finish that?*

**DR. JOHNSON:** I finished in 1944 and was commissioned a first lieutenant in the Army Medical Corps. But before getting we get into graduation... I continued my interest in chemistry and simultaneously was taking courses in colloid chemistry and doing research in the graduate school at Howard University, under a Dr. Shureshevsky, a very fine physical chemist. In my last year in medical school, he left Howard and went to Columbia, and he asked me, when I was graduated from medical school, he said, "Johnson, join me in Columbia. I want you to join me."

I said, "What will I be doing?"

And he said, "Pure chemistry."

It turns out he was with the Manhattan Project; he was going to get me to join him there. But I decided not to give up my medicine and I went on for a medical internship.

I was commissioned a lieutenant in the Army Medical Corps. I started my internship and was hoping to get an assignment in the Army at some useful post which might utilize my ability in chemistry or medicine. But there were no openings. In addition to looking at the Army, I looked at the Navy. No openings; they didn't need us. They said, "We have enough colored physicians." And we were consequently released.

*Q: This is really absolutely shocking.*

**DR. JOHNSON:** That's the way things used to be, that we were released at the time of the Battle of the Bulge, when I think any doctor would have been of help to the armed

forces.

*Q: For the war in Europe, and also we were getting ready to have a million casualties in our invasion of Japan, that was our prognostication.*

**DR. JOHNSON:** Right, that was someone's decision that we weren't needed. There were a number of colored physicians out at Fort Huachuca, just sitting there, no particular duties.

*Q: That's in Arizona.*

**DR. JOHNSON:** Arizona, yes. So I was given a discharge from the military; told I was still draft-eligible.

After Howard University Medical School, I went to the Jersey City Medical Center in Jersey City, a very fine institution under the leadership of, of course, the great Boss Haig. Everything in Jersey City was controlled by Haig.

*Q: He was the great boss.*

**DR. JOHNSON:** Sure. But there was one advantage to this terrible situation: he would take what he thought were good doctors, he didn't care where they came from. I guess he got a certain amount of political support from people. He never bothered doctors, but all the other city employees had to line up every once in a while and put certain monies in his coffers.

I can recall on one occasion I was treating one of his henchmen, and the guy was complaining about this young doctor taking care of him. Haig came in and said, "Shut up! We have the best doctors in the world here." And that's the impression he gave. It was a good experience in Jersey City.

*Q: Were you practicing general medicine?*

**DR. JOHNSON:** I took a nine-month internship, rotating through various services. And then again there was a problem from certain services I couldn't go on. For example, general surgery. The chief of general surgery just wouldn't let me come on his service. Other services were unrestricted. I went on internal medicine. I spent two months in tuberculosis. As a matter of fact, I lived in a tuberculosis sanitarium. The hospital did not allow us to live in the regular interns' quarters, we lived in another building. Of course, that's all been changed now. We were allowed to go to OB/GYN and other services, but not general surgery.

*Q: Was this pure prejudice, or was this guild business?*

**DR. JOHNSON:** No, this was pure prejudice on the part of the chief of surgery. He just

didn't tolerate any people of color on his service, he just didn't want them, and he was the king of his service. He was in many respects an old-fashioned sort of doctor. And this was in 1945, he was not wearing rubber gloves for surgery. He washed his hands and used his bare hands into the abdomen, because he thought he could get exquisite feel. He didn't wear gloves; that was just another example of his ways.

After nine months, I got into pathology and I never left, because it was close to chemistry. I did a couple of years's residency there in pathology.

*Q: Well, I take it this was a happy coincidence that you had really been pointed towards it, your concentration on chemistry and medicine. Had you been looking at pathology over your shoulder all the time?*

**DR. JOHNSON:** No, I had not been looking at pathology over my shoulder. It was only when I got into that pathology laboratory and realized how close the chemistry and pathology were together that I really said I'd make a career of pathology.

*Q: This was in New Jersey, is this right?*

**DR. JOHNSON:** Yes.

*Q: What was the state of art of pathology when you came in? Because, of the doctors I've talked to, you came in relatively early into this field, really in the early post-war years.*

**DR. JOHNSON:** Yes. Well, I can tell you the state of pathology was much like it is today. The modern, so-called high technology was beginning to move in. I recall just another experience. While I was at Jersey City, I came down with hepatitis, and my chief, Dr. Gnasi, great pathologist that he was, wouldn't let me read the report from the AFIP on hepatitis, what a terrible disease it was. I had a very mild case and recovered very rapidly. I was very well treated in the hospital there; I had a great group of people around me. I coached the nurses' baseball team and had a lot of fun with them.

*Q: You mentioned the report on hepatitis from the AFIP, although at that time it was still the Army Museum, I suppose. Were you much aware of this as you moved into pathology?*

**DR. JOHNSON:** Yes, I was very cognizant of the contributions of the Army Medical Museum in pathology.

*Q: How did it serve? Was it just something off there, or was it considered...*

**DR. JOHNSON:** It was considered a place to send your difficult cases if you wanted a good opinion. There was another place we sent our cases from Jersey City, and that was

to New York City to the laboratory of Sloan-Kettering Institute for opinions. But we also sent things down to Washington.

*Q: What were the principal tools you used in pathology?*

**DR. JOHNSON:** Well, the main tools were the microscope in those days. But, because of my interest in colloid chemistry, I was doing a little experimental work in colloid chemistry. The fire department was very helpful to me in constructing certain apparatus. I was studying surface films on a trough, and the fire department cast for me a large bronze trough on which I could do this experimental work. So it was matter of sort of integrating the local facilities.

*Q: Well, were there any universities at that time which were considered to be making real progress and innovations in pathology?*

**DR. JOHNSON:** I suspect Columbia University in New York, the University of Pennsylvania. The University of Chicago, I think, was probably by far the leading one. There was Harvard; there were a number of the great universities. The University of Michigan was doing good work in pathology, too. So there was a choice of where to go for further training.

*Q: By that time, I would imagine that the United States was more or less preeminent, partly because of the war. Germany at one time must have been a very strong area for pathology, but that must have been over by then.*

**DR. JOHNSON:** Yes. Incidentally, I was thinking about some training in Europe early in my college career. I was impressed by the work in Switzerland and Austria in chemistry, and I had hopes of going to one of those places. But then the war came along and that was all eliminated.

*Q: How long were you in New Jersey?*

**DR. JOHNSON:** I was there about three and a half years.

*Q: Did you get married or anything in this period of time?*

**DR. JOHNSON:** No, no, no, no. I went on to return to Washington, to my old school, Howard University, as the acting director of laboratories for what was called Freedmen's Hospital, the old hospital.

*Q: You came there when?*

**DR. JOHNSON:** In, I guess, '46, stayed there till '48.

*Q: What was the situation as far as hospitals in Washington at that time? There was the Howard hospital, George Washington, Georgetown, and some others. How did you find the state of medicine there?*

**DR. JOHNSON:** Well, it was more or less the same in all the hospitals--some good, some bad. The schools all shared the Municipal Hospital, Gallenger. I never had duty out there. They'd have some training at St. Elizabeth's for psychiatry. But I was not interested in clinical medicine, so I didn't pay too much attention to all the others.

*Q: You were in charge of the laboratories. That was more than just pathology then?*

**DR. JOHNSON:** Yes, well, the laboratories are considered an integral part of pathology, so-called clinical pathology, including the blood bank and serology and bacteriology, all those things are part of the broad field of pathology, because pathology is the science of disease processes, so anything relating to disease is a part of pathology.

*Q: Well, in '48 you did what?*

**DR. JOHNSON:** Left the job at Howard. I got an Atomic Energy Commission post-doctoral fellowship in medical science at the University of Chicago, and went there for, I guess it was, four years. I selected Chicago because of its great pathology department, and also because of the advice of Colonel Ash, who was the director of the Army Medical Museum in those days. I would take cases down to him occasionally, and he occasionally said, "Well, go down the hall and see one of the young boys," meaning Dr. Helwig, who was a young boy in those days, and Dr. Lent Johnson, also Dr. Hans Smetana, the great pathologist in liver disease who I worked with later after I came back.

So I went to Chicago, and I had a very good experience there, first, two years in pathology, studying...since it was atomic energy, the fellowship was something related to radiation. It was the use of radioactive isotopes in the study of protein metabolism.

*Q: This was what, part of the Fermi...*

**DR. JOHNSON:** Part of the great institute there. I was actually in the Department of Pathology, but there were all these connections at Chicago at the various other basic science groups. It was a wonderful experience there. It was a mingling of a distinguished faculty and the graduate students.

*Q: Were you involved at all in the analyzing of the Hiroshima and Nagasaki victims?*

**DR. JOHNSON:** No, no, that was something that I ran into when I came back to the AFIP, because that was being done at the AFIP. But I never became a radiation pathologist, I was using the chemical methods and taking advantage of the Atomic



Energy Commission fellowship to study chemical problems.

*Q: Were you finding that as you were at Howard and at Chicago, there a change in the utilization of chemicals, developments in the fields?*

**DR. JOHNSON:** I suspect so. I wasn't conscious of anything in particular going on in regard to chemistry. But at Chicago there was a discipline called chemical pathology, which I announce as my discipline today.

*Q: It's called what?*

**DR. JOHNSON:** Chemical pathology, that was the application of these chemical methods. And there is only one book on the subject and that's called *Chemical Pathology*. It's by a man named Wells, who was at Chicago. He had already died when I came there.

*Q: So, once again, you sort of cut out a certain area of expertise there. Were there many in this area?*

**DR. JOHNSON:** No, no, not too many. The direct discipline which I sort of got into was called histochemistry, and is the application of chemical methods to the study of tissues. And a great leader in that field was at Chicago. He wasn't in the Pathology Department, but he was in the Department of Internal Medicine. He taught classes maybe one or two days a week, and the rest of the time he was just walking around, thinking, working in a laboratory--a very inspiring character - Dr. George Comori.

*Q: Were you working on any particular areas of tissues?*

**DR. JOHNSON:** Well, this general training in the isotopes was not really relevant to my subsequent studies. Before going to Chicago, I had gotten married. I had a wife and, later, a child, so I needed a little more money, and the fellowship wasn't really paying quite enough to really live in the sort of way I thought I should.

I took a job at the University of Chicago in the Department of Anatomy as a research associate in anatomy. And there the money was a little better, and I still had the chance of doing the things in histochemistry, because I had the good fortune of going to work for a man named Dr. Isadore Gersh, who was really one of the pioneers in the field of histochemistry. Subsequently, when I came back to Washington, I applied some of the things I had learned from Gersh.

But there we were studying two topics: atherosclerosis and radiation cataracts. Radiation cataracts, I guess, took up most of my time. The radiation cataract studies got started because a couple of individuals in aligning their equipment, the cyclotron, had actually looked into the cyclotron to see...I don't know what they were expecting to see, but you shouldn't look in there because it's got a strong beam coming out, and several

investigators had cataracts develop from this exposure. There were other people developing cataracts from various other, not-so-direct exposure to neutrons. So we had a research grant and did studies on the radiation effect on the lens, using rabbit lenses.

Well, then, after two years in anatomy, finally Harry Truman was there. Harry Truman took a firm stance on the matter of who can work where, and lifted the restrictions on people, and made it a new era in the military service.

*Q: Well, this started around '48, didn't it?*

**DR. JOHNSON:** Forty-eight, yes, it was just that time.

*Q: Integration of the services came very forcefully.*

**DR. JOHNSON:** Yes, right. And, of course, I was then delighted to...I was under the...draft. I didn't wait for my number to come up, I volunteered.

*Q: This was the Korean War.*

**DR. JOHNSON:** Yes, the Korean War came in in '52. And there was a lot of negotiation. I wanted to finish up my studies, didn't want to leave too early, but I didn't want to hang around and not get in the service.

So finally, in February of 1952, I was ordered to the Armed Forces Institute of Pathology for a ten-day period, temporary duty, just to see how things were going at the AFIP.

What happened when I got to the AFIP, there was a freeze-dry apparatus which they had for research purposes. The apparatus was actually invented by Dr. Gersh, who I had worked with, and I was able to get this apparatus working. And the director, a General DeCoursey at that time, said, "Do you want to stay?" He gave me verbal orders to stay, and I've been at the AFIP ever since.

*Q: Since 1952.*

**DR. JOHNSON:** Fifty-two, yes.

*Q: It was by that time the Armed Forces Institute of Pathology, wasn't it?*

**DR. JOHNSON:** Yes.

*Q: Where was it located, and what were sort of the working conditions and all that?*

**DR. JOHNSON:** It was down at my favorite old building, down there at 7th and Independence, the great old monumental structure, I thought, with the medical library in one half and the Armed Forces Institute of Pathology in the other.

*Q: The old brick building.*

**DR. JOHNSON:** Old Red Brick, they called that place. I had a laboratory on the third floor, and I had everything I needed to work with in terms of equipment and so forth. I thought it was a wonderful opportunity. But then we were already building this present structure at the time, and one of my jobs was as sort of a special assistant to Col. Vorder Bruegge, who was in charge of the new building, buying things. So I got involved in that, spent a lot of time selecting equipment. We didn't know exactly what we'd need in this new facility, but General DeCoursey said, "Buy whatever you think you might need that would help us in our work." So I did a lot of buying in those days; spent about two million dollars in a year. In those times, two million dollars would buy a lot of things.

*Q: What was the state of the art? What type of things did you feel that, with sort of this relatively open purse, you could get?*

**DR. JOHNSON:** Well, the important thing coming along then was electron microscopy, and, of course, we had provision for an electron microscope. The technique of ultracentrifugation was also very important in those days; we got an ultracentrifuge. And then we just got many little things, nothing major outside of the electron microscope. Oh, of course, we got a large radiation facility, a large X-ray machine, which was mounted in our basement in the room that's now occupied by the scanning electron microscope. When you wander around, you might see this facility. It was a very powerful General Electric X-ray machine, a therapeutic machine, intended in our hands for experimental work on animals. But once the hospital's X-ray machine broke down, and they were bringing patients here to the AFIP for treatment with this marvelous big X-ray machine.

*Q: At the Old Red Brick building, the Museum was also there at that time.*

**DR. JOHNSON:** Yes, exactly.

*Q: How was that viewed by you and all at that time, its utility?*

**DR. JOHNSON:** Well, we thought it was a tool, closely connected, and we felt it should not be separated. There is some present tendency to separate the Museum; it tends to be its own entity, but we feel that the Museum is an integral part and should not be separated. We know that it's not fully utilized here on these grounds, and we hate to see it so neglected. It should be down on the Mall where it was.

I was so angry at Mr. Hirshhorn when we first got that Hirshhorn Gallery down there, because our building was declared a historic landmark and then it was knocked down a few months later to make room for the Hirshhorn Gallery. It took me two years to get into that gallery. I liked it, actually, when I got into it, but I thought it was a terrible shame to destroy our building.

*Q: Yes, I take it there was quite a bit of hard feeling about this whole move at that time. What was your impression of what were the pressures and all that, that caused the dissolution of the Old Red Brick building?*

**DR. JOHNSON:** Oh, I don't know those pressures. And I think it was, of course, money, at first, the amount of money given with the art work, and then a tremendous collection of art work. I can see why there'd be certainly temptation to make room for it; I don't blame them. And maybe, overall, it's good. My hope is that someday we'll have a museum down on the Mall, but still not what's called now the National Museum of Health or whatever it is. I still think it's the Armed Forces Medical Museum.

*Q: Why did you feel that the Museum was an integral part? What was its purpose?*

**DR. JOHNSON:** Well, it began by these pathologists collecting things and making them available for study. And it in general always had a pathologist in the driver's seat. As a matter of fact, I spent two years, myself, as curator of that Museum during an interim period before Dr. Micozzi.

*Q: This was later?*

**DR. JOHNSON:** Yes, I don't recall exactly what year, because I've had so many jobs. That was one of them, two years as curator, and I enjoyed it. Tried to do things that were good for the public display. That was a part-time job for me at that time.

*Q: Well, with the electron microscope, what was the background, the history of its development before it came to be used by your group?*

**DR. JOHNSON:** I'm trying to think how to best answer that question; it's a difficult one. There were many groups using electron microscopes before we got our microscope at the Armed Forces Institute of Pathology. There was already one in use across the street in the Walter Reed Army Institute of Research, where the great studies on viruses were being done by Dr. Smadell. And they were doing very excellent work on visualizing viruses, and that was important.

But, later, others became interested in visualizing not only the virus but cells. And the visualization of cells depended on making cuts, sections of tissue.

And one of our early authorities on this subject was a fellow named Harrison Latta, who, it is stated, saw a hobo in the Union Station shaving with a broken Coke bottle, with a very sharp edge. Just break glass, it gives a fine edge. So he took this idea and developed the glass knife; that is, a broken glass which we use for cutting tissues. And great strides were made once we got the glass knife; you could make real thin sections. Because you couldn't really sharpen steel sufficiently sharp to get a really good section free of stripes. So the glass knife was a great innovation. And that is one thing

that was developed at the AFIP, though it's often forgotten. Harrison Latta subsequently left the AFIP and went out to the West Coast somewhere, but it was an important contribution.

So we utilized the electron microscope for looking at tissue sections. Actually, electron microscopy came in sort of under my domain, and I was able to get a person from the group at the Institute of Research. A young sergeant over there named Tousimis was doing good work over there, and I thought, well, gee whiz, he ought to come over here and help us. He was a technician there, and I said, well, he would be a good technician for us. But instead of becoming a technician, his skills were recognized by our scientific director, Dr. Goodpasture, a very wise man, who said, "Tass, we want to put you in charge of electron microscopy," and he did. And Tousimis did a very good job at electron microscopy. Just a college graduate. He was working on an advanced degree at George Washington and was doing good work there, but he somehow got this job. We encouraged him to continue his graduate training. He finally got a Ph.D. degree and left us and opened up his own company, called the Tousimis Research Corporation, which now sells electron microscopy supplies and does service work. If you want something done on research, a private contractor at his company will do it. He is now retired, but his son is in the business. So we had the good experience of having Tousimis with us, helping us in the early development of electron microscopy.

Then we've had a series of very, very fine investigators in electron microscopy.

*Q: This was, I take it, then, a prime tool.*

**DR. JOHNSON:** It was a prime tool.

*Q: Did it sort of open up new areas?*

**DR. JOHNSON:** Yes.

*Q: Particularly, I'm thinking of the period when you first starting using this.*

**DR. JOHNSON:** It was hoped that it would be a great help in the diagnosis of tumors. It hasn't really proven to be as good as expected, but it certainly was a valuable tool to look at tumors and see how they differ from normal tissues.

The other area that we started here was the technique of X-ray diffraction. X-ray diffraction is a very old technique in the industry, but as far as medicine was concerned, was very new; sort of innovative, really. There was in Detroit, at the Harper Hospital, a person named Parsons who was doing this sort of work on materials from pathologic tissues. I think we were one of the first groups to do X-ray diffraction studies for identification of particular material in tissues on a large scale, and we still continue this interest in X-ray diffraction.

*Q: Did you have to have special instruments?*

**DR. JOHNSON:** Yes, our initial equipment was something very simple from the Siemens Company, an X-ray generator with four ports through which the beam came, and four cameras. There is a film at the periphery and there is a ... specimen. We get a pattern on the film, and then by making certain measurements on the film we can identify various substances, based on their atomic structure.

Well, after our initial experience with this small machine, Dr. Kenneth Earle came here to the Institute to take the course I was giving in histochemistry. We developed a course in 1954 in histochemistry applied to pathology, at a time when there was no course of a similar nature offered by a university. And Dr. Earle took one of our earlier courses and was impressed by X-ray diffraction, one of the things we happened to cover, and decided he would come to the AFIP. He's a very well-trained neuropathologist, and when he came, he wanted to apply some of these X-ray diffraction techniques to nerve tissue. And he got some support from the Army Research and Development Command and was able to get us equipment of a very advanced nature. So we are much in debt to him for this advance in our equipment.

We continued to give that course in histochemistry for thirty years, and finally stopped in 1984, because by now everyone knows about histochemistry and it's not really needed that we have a special course at the AFIP.

*Q: Well, going back to the early days of the AFIP down on the Mall, what was sort of the spirit of the place?*

**DR. JOHNSON:** It was a very friendly place to work. For example, the director and all the staff just sort of sat together with bag lunches, because we were a little ways away from most of the restaurants, and we'd sit around and have our informal discussions and enjoy a very pleasant life, a very, very friendly atmosphere there. So there wasn't as much isolation as we have today. Now, it's each department wants a separate entity; then, it was everyone together. We'd have conferences maybe three days a week, in an old projection room, and show slides on the wall, and we'd look at them and criticize the speaker, and sometimes we had very vigorous discussions on diagnostic material. It wasn't quite as good as when, under Colonel Ash, everyone sat around a microscope and looked at the same specimen. This was a projection, not quite as good as sitting there looking through a scope.

*Q: Did you feel at that time the hand of the military? Were you an Army doctor?*

**DR. JOHNSON:** Yes, I was a captain in the Army for my first two years at the Armed Forces Institute of Pathology.

*Q: And some were civilians?*

**DR. JOHNSON:** Yes, we had military and civilians.

*Q: Was there any differentiation?*

**DR. JOHNSON:** No, there was no great trouble or conflict between the military and the civilians. It was a most unmilitary assignment, I can say that.

*Q: By this time we had troops all over the world. How was the Institute being run as far as specimens coming in; was there an emphasis on military problems as opposed to civilian ones?*

**DR. JOHNSON:** I don't think the fine distinctions were made between military and civilian problems, because a military physician, in pathology or in other disciplines, has to treat civilian dependents. No, we got specimens from all over.

We did make special efforts to get some special materials for our military problems. In fact, toward the end of the Korean War, I was supposed to go to Korea and collect some specimens on hemorrhagic fever, which was quite a problem in those days, but the armistice came along before I got to make my trip.

*Q: Where you involved at all in dealing with the results of possible nuclear attack?*

**DR. JOHNSON:** No, I was not. There was a special group called Radiation Pathology, under Colonel Tessmer, which handled the matter of the atomic bomb casualties and so forth, and that was a large undertaking. I wasn't particularly involved except an occasional consultation with them.

*Q: On the teaching side, you mentioned this course on histochemistry, was teaching a major principle of the Institute?*

**DR. JOHNSON:** Yes, it has always been one of the major responsibilities of the Institute. We like to say we do education, consultation, and research, and the interest is almost equally divided.

I was always involved in other courses, giving lectures on my subject and, of course, on veterinary medicine or some other problem, or oral pathology, whatever. I always have had an interest in teaching. Many of us on the staff hold appointments at the various universities. I happen to have had appointments at Howard University, where I held simultaneously three different, sort of visiting professorships in pathology, physiology, and pharmacology. Of course, I didn't go there very often, but I at least had appointments and interest. And I also had an appointment at Georgetown and George Washington and the Uniformed Services University. You might say that the appointment at Georgetown was the least pleasant, because Georgetown expected us to come at least one afternoon a week, and I just couldn't spend one afternoon a week, so I dropped out of that program. With the other schools, you can give an occasional lecture maybe once a year, or a couple of times a year. At Howard, I was involved in the program in

pharmacology, trying to train people, particularly government employees, in pharmacology, in which there is a sort of a scarcity of toxicologists and all the related people, so I was involved in that program.

*Q: What were your relations with the Bethesda Naval Hospital? Although there was integration, from talking to the other people, the Navy sort of went its own way, or at least one has the impression of that.*

**DR. JOHNSON:** Yes, the Navy was a little slow in many respects. Actually, as far as this Institute's concerned, even though we had a Navy director (after DeCoursey there was Captain Silliphant), we never were very close to the Naval Medical Center. I don't know exactly why. Things have become better now and there is more closeness, but the Navy was always sort of separate and on its own. I can't say why.

*Q: One of the Naval officers I talked to said, well, there is always the right way and the wrong way and the Navy way.*

**DR. JOHNSON:** Yes, well, I think they're going to become more civilized now.

Incidentally, my brother was appointed to the Naval Academy, and that was something that sort of influenced me. I guess it was in 1936 he was appointed to the Naval Academy, and he had many very traumatic experiences there. People wouldn't speak to him, and he was getting punishment for various things he had not...

*Q: Did he graduate from there?*

**DR. JOHNSON:** No, he lasted, I think, about nine months. He was doing okay initially, but the upperclassmen were out on ship on a cruise, took a vote and said they didn't want him, came back and made life miserable for him at the Academy. A very, very traumatic experience.

*Q: This must have been a very bitter experience for the family, wasn't it?*

**DR. JOHNSON:** It was. He was thrown out. He'd already had three years at Case Institute of Technology, which is now Case Western Reserve, and was doing okay in his studies. But they said he was academically deficient, and some physical impairment they also found (I don't recall just what it was), and said, "Out!" So he left there and he went to M.I.T. He did alright at M.I.T. Subsequently was employed by the Bureau of Standards. Had a strange job, he was the hydraulic engineer. His job initially was checking toilets... and see how the toilets... He had a whole building full of toilets, pull the chain and make measurements on the flow. But he didn't stay there too long. Then he went to the Picketenny Arsenal and was employed as, I don't know, something in regard to explosives. Then he got into the Army Air Corps as an engineering officer and served in North Africa and Italy. But then he came back to the Navy. Then he got a job at the



David Taylor model basin and served a career there. So he didn't have that much hatred for the Navy.

*Q: Well, you were living in Washington. In the Institute, you haven't mentioned any, were there any problems here?*

**DR. JOHNSON:** No, no. No problems. No, no, no.

*Q: You were here during a very tumultuous period as far as race relations were concerned. All over the country, particularly the fifties and sixties were very, very...well, tumultuous is a good term. But the ripple effect didn't...?*

**DR. JOHNSON:** I don't think it did, not seriously. I can recall first getting to the Institute and if someone had a big something to move, they said, "Well, let's get some of those colored men to move it." That was a job that colored people had, moving things around. But already there were a few secretaries, and things gradually have improved. When you have a job to be done now, you get whoever can do it, you don't ask for a colored man to do a lifting job.

*Q: Who were some of the leading lights that you remember at the Institute in the early days?*

**DR. JOHNSON:** Well, my first contact was with Colonel Ash, who was certainly a stellar individual. Then I met Dr. Hans Smetana and Elson Helwig and Lent Johnson; they were sort of my favorite people in those days.

*Q: Colonel Ash, of course, one of the major figures in the AFIP, what was his style of operation, would you say, as you saw it?*

**DR. JOHNSON:** Very low key. Very low key. Height of informality. Almost non-military. But when he had to be military, of course he was a military guy. But a very, very kind, good guy. Very informal teacher.

*Q: General Dart took over from Ash. One of my interviews was with Dr. T. C. Jones, who was mentioning that he got caught between. There were a lot of sparks between these two.*

**DR. JOHNSON:** Yes, I'm sure there were, but I wasn't around for those sparks.

*Q: So that didn't really affect you at all.*

**DR. JOHNSON:** No, I wasn't even in town in the days of General Dart.

*Q: Oh, yes, you came in with DeCoursey. How much did you get involved in what you might call specifically military work? I mean, preparation for battle.*

**DR. JOHNSON:** Well, I never got really involved in preparation for battle, but I did get involved in a number of projects relating to the military.

For example, one of my early assignments when we first came to this building, in research, was work on plasma expanders. These are agents intended to replace blood when it's lost. And there were a number of them, and we were experimenting with them with. We were getting material from several civilian contractors who were doing animal work and sending it to us. There was a team in Germany collecting results of the German experience. Because during the war the Germans had no blood banks, they used a plasma expander called polyvinyl pyrrolidone, PVP, and it was very extensively used, but the records in general in the German hospitals were difficult to secure after the war; things had been bombed out. So a special team went over and got this material, brought it back, and I had the opportunity of studying these samples of German plasma expander. And we thought PVP was going to be an ideal agent, very cheap, totally synthetic, it caused no particular reaction in tissues; you'd see clusters of it, but no inflammation. And we were stockpiling it. But then someone found that it caused cancer in rats, a sort of sarcoma from this agent PVP. So right away the bottom dropped out. The PVP was removed from the American scene, a lot of it sent to Vietnam and other foreign countries, and still we occasionally see patients who've received PVP somewhere on the other side of the water. And we can recognize the presence of it by these collections of blue staining material--no inflammation, blue staining material. And we ask where did this come from, and when we find out, it's usually from a foreign country.

*Q: Has it turned out to be causing cancer?*

**DR. JOHNSON:** There is no evidence it causes cancer in people, only in rats. There are so many things that cause cancer in rats but not in people.

*Q: Speaking of which, how did you find the use of animals as far as research? Was this satisfactory or not?*

**DR. JOHNSON:** Yes. When we were first at the Old Red Brick, we had no animal facilities, so we relied upon civilian contractors to do the animal work, and we just simply received the tissues. When we got here, we got a very excellent animal facility, under the direction of people like T. C. Jones and others who were a very superb veterinary group. We did many experiments with animals. I'm not doing any right now. In recent times I've been the chairman of the Animal Use Committee, a sort of committee to oversee how animals are used and make sure that they are humanely treated. And I think they are, here in this building.

*Q: I had an interview not too long ago with Dr. Karnei, and he was mentioning that he*

*found that the animal facilities were not being used as much as they might be.*

**DR. JOHNSON:** No, not as much as they might be, and that's something that's regrettable. I think we went through what I call the golden age of the AFIP, that was around 1966 or so, thereabouts, when there was a lot of intense experimentation going on. Since then, it's been, in my opinion, going a bit downhill in regard to experimental pathology. I think it reflects the interests of the staff.

*Q: Let's talk a little about this. What were the interests, say, in the sixties? What was spurring this, and in what areas? And then where do you see the change?*

**DR. JOHNSON:** Well, part of the interest was in a group that I was a part of called the Basic Science Division, where people did many things that weren't always necessarily closely related to applied problems, or problems at all. There was a lot of looking at and seeing how things are working. Well, around the middle sixties there became a sort of impression that the surgeon general or other authorities wanted us to work on strictly military problems, or strictly problems related to the care of troops, the health of troops. And that sort of really got rid of many of our interests in basic sciences.

*Q: How did that manifest itself, this feeling? Did somebody come around and say knock it off, fellows, get back to the troops?*

**DR. JOHNSON:** I don't recall exactly how the word was put out. I don't think anyone got up in a meeting and said you've got to change your ways. But there were implications. There were certain groups abolished completely; certain studies were discontinued. That is, Army R&D stopped supporting certain things that we thought were probably of a more general basic-science nature. And some people even changed the names of their departments. For example, "Biophysics," which is concerned with the physical and biological interactions, became "Cell Pathology," something that looked like it's more related to something that's not just physical in nature, cell pathology. And it flourished for a while and then sort of died. It's not dead, but it's not what it used to be.

*Q: Let's go back to the early years when you arrived, around '52. Where were the greatest fields of activity and accomplishment in those times?*

**DR. JOHNSON:** I think the development of the techniques of immunopathology were very important in those days. That is, the developing of methods of identifying organisms or products of foreign materials in tissues protein in nature, using either fluorescence...in fact, in those days it was with fluorescence, an antibody tagged with a fluorescent substance that would latch onto the antigen, the bacteria or other materials in a tissue, and identify it right where it is. That was a very important development, and I think we at this Institute had a good part in that.

*Q: I suppose, with your chemical background, you were very much involved in this.*

**DR. JOHNSON:** Yes. I had the good fortune of having with me a very excellent investigator named Dr. Silverstein. Arthur Silverstein came to us from, I think, Albany, New York, a very well-trained physical chemist, very interested in what he could do to apply his chemical methods to problems in pathology. Well, it so happens that he, and a little help from me, developed these methods, which had been mostly known in an area of biology. Silverstein and I started trying this technique, which was developed originally at Harvard. It required cutting tissues frozen, by what's now called cryotomy. There are devices now, refrigerated boxes in which a microtome is placed, and the specimen is rapidly frozen with liquid nitrogen and put into this cutting device in the cold. When the sections are cut, they come off without melting and they can be picked up. We didn't have a cryostat in those days of the sort that is now available. But we had an old incubator, and we took the door off the incubator, cut a couple of holes in a piece of plywood, where we could put our hands inside and put the microtome in there and then chill it with dry ice. We had an old hair dryer that we used to blow the air in there to keep it circulating and sort of regulate temperature. It worked pretty well, and we got good sections.

The other requirements were of a chemical nature, synthesis of these various labeled substances. And one of the requirements was to utilize phosgene, military gas. So sometimes we'd have to don our gas masks and proceed to do this synthesis with phosgene.

And we had also little battles going on in the Institute regarding the turf. We were on the third floor, and there was a very powerful individual on the third floor, Colonel Bernier, chief of the dental and oral pathology group. And so we would battle occasionally for space, and he'd always win. And he did it so magnificently I always agreed he really deserved that winning. But on one occasion he asked if he could put one of his men in one of our rooms to temporarily sit there. In the meantime, we said, well, we'll get rid of this guy, because we use all this phosgene. So we got our gas masks on and proceeded with our synthesis. Meanwhile, the guy had to leave the room. And the next day, Colonel Bernier had things arranged so we wouldn't be in that room any more. A very excellent, fine gentleman. He went from colonel to major general in one step; he became chief of the Dental Corps. A very excellent guy, and he was very supportive of our research efforts, but when it came to space, he was always the winner.

*Q: I think turf battles are always very interesting, particularly in a military environment. How did you operate within this? Did you have any techniques for survival?*

**DR. JOHNSON:** No, I have no particular advice for anyone, no techniques. You win some, lose some. I try to just be a guy that's willing to help anybody; no matter what their problem is, I try to help them. And I hope that sometime they'll do me a favor and help me.

One of my great tendencies is to save old equipment, and I have closets full of old

equipment. And there are some directors who've come through here and had a very dim view of old things and wanted to get rid of it, and said, "Get rid of that junk and get some new stuff in here." But we've held onto things, and people will come to me and say do you have this, do you have that, and I'll say sure, I've got it, and we get it out, and it makes a real friend when you can help them with something that's useful.

*Q: Well, again, going back to the earlier times that you were here in the fifties, what were the strongest departments, would you say, and what were the weaker ones?*

**DR. JOHNSON:** Well, I think the strongest departments were departments run by people like Dr. Elson Helwig in skin and gastrointestinal disease; Dr. Lent Johnson in bone pathology; and Dr. Hans Smetana in liver pathology. Oral pathology has always been strong and continues so, and also veterinary pathology. I think those were probably the outstanding departments. I neglected one I should mention particularly is obstetric and gynecologic pathology, very strong, always been strong. In fact, you could mention almost any department at some time or other as being very strong.

*Q: They wax and wane.*

**DR. JOHNSON:** Somewhat.

*Q: By mentioning the name of Smetana, one obviously thinks in terms of the Czech composer. I'm told that a group of you used to get together and play recorders.*

**DR. JOHNSON:** Yes, yes. I don't know who told you that.

*Q: Oh, I have my sources.*

**DR. JOHNSON:** Because that's not too well known. We did play recorders, and Smetana would join in. He is, of course, related to Bedrich Smetana; he is a nephew, I think, or something, of him, and a very, very fine gentleman. He is one of the first people I had close contact with when I came to the Institute, and he gave me tremendous support.

*Q: His field was what?*

**DR. JOHNSON:** He worked primarily, in the later years, in the area of hepatic pathology, liver diseases, and a very great master in that. But to me a great, fine gentleman. He was subsequently relieved. He was the chief of pathology at one time, but General DeCoursey, whom I respect very highly, saw fit to relieve Smetana from the chairmanship. He was accused of being arbitrary and dictatorial, and maybe he was; I didn't find him so, and he was a wonderful guy. He was replaced by Dr. Hugh Grady, a very fine gentleman also, who was in the obstetric and gynecologic pathology area. But we certainly missed Smetana, because always he was on the front row at a conference,

always asking searching questions, appropriate questions, and after this demotion, he was suddenly in the rear, just sitting and not really participating like he used to. That's the one thing that I regret seeing most, was Smetana's change.

*Q: Well, obviously, personalities always play quite a role. Were there any other people who, by their contribution or method of operation, stand out in your mind in the earlier days?*

**DR. JOHNSON:** Well, I had the great good fortune of working with a man who made a great contribution, Dr. Isadore Dubin. He and I worked together on a disease, a mild form of jaundice, which later became known as the Dubin-Johnson Syndrome. So, consequently, my name is known, along with Dubin, to most every medical student, and it's in the dictionaries and all that. So I was working with a great figure in the field, but, again, a guy that was not well liked by many people. He had his little idiosyncracies, but we certainly got along very well.

*Q: Well, it sounds like a classic case of an organization where you have an administrator who comes in who has to run the organization, and you have powerful figures who are running a branch (this could be in any organization you can think of), and there is just a built-in clash. It's a matter of priorities and all this. Were there any classic battles in this...?*

**DR. JOHNSON:** There were no really classic battles, but there were some very strong attempts by certain administrators to make changes. And there were words like "fiefdoms" used, saying that we had little fiefdoms and we didn't want to change or modify our behavior. But I think the fiefdoms continue.

*Q: What about the consultations, for example? Obviously, you're having essentially an open system where you receive requests for opinions on specimens. There must have been a great deal of variance in how a department would answer them. I'm talking about timeliness and all this. This must have always been a bone of contention, wasn't it?*

**DR. JOHNSON:** Yes, it caused a lot of headaches for the directorates, complaints about lack of prompt reply on specimens. But in many cases these delayed, delinquent reports reflected scholarly endeavors, efforts to get at the root of a disease. But we used to take almost anything and there was no charge for our services. Within in the last couple of years, there has been this institution of charging for cases, and many go along with it. I don't like it at all.

*Q: The great value of the Institute has been basically its archives; the fact that if you have a problem case, you have maybe a hundred specimens of it, where the normal place would never have it. Do you feel that charging for these opinions now cuts off the flow of interesting specimens, or does it just cut out the routine type things? How do you feel*

*about it?*

**DR. JOHNSON:** There have been those who say it's made the quality improve and that people are more selective in what they send in. I don't believe that one bit. You never know what's good and what's bad until you take a look at it. Some of my best specimens have come in improperly labeled or with poor history, and I could find something very interesting. I am not sure that charging is improving anything at all. And it makes a burden on the Institute's staffing, to increase staff to take care of all these charging businesses.

*Q: What you're saying sounds like the classic thing that I've seen throughout institutions in the United States, government and nongovernmental. You might say, the accounting and business side increases, as opposed to the producing side.*

**DR. JOHNSON:** Yes.

*Q: This is heresy, I know, but I think it's hurting.*

**DR. JOHNSON:** But we don't charge. Anything that I do is not charged. I am not in the group. There are certain groups in the building that are charging, and others that are not. And I try to stay within the not-charging field.

*Q: Well, how have you worked, and has there been any change? Obviously, other pathologists send in specimens to you. How do you respond to these? Have you had problems getting out the information? Is it by telephone call, or do you feel under a certain pressure to get them out?*

**DR. JOHNSON:** Yes, there are occasional telephone cases, and now there is an emphasis on use of the FAX method. And I understand our military reports are all going out by FAX nowadays. I can't vouch for that, but someone tells me that they're going out by FAX. I do a lot of work for the Veterans Administration, and I understand that's going to be FAXed now.

I have what's called the Registry of Former Prisoners of War; that's one of my other little activities. In 1980, the VA decided that every case of a material from a former prisoner of war, no matter what it was, would be sent to the AFIP for review. And this is a way of getting a broad spectrum of diseases that people have as they get old, so I've sort of enjoyed this opportunity. But there are many things that we would not have received had not this study been set up.

*Q: How have you worked with following through, and what have you seen develop from this Registry of Former Prisoners of War?*

**DR. JOHNSON:** Unfortunately, very little has shown up. The former prisoners of war

have the same diseases as other people of comparable ages. We thought that we might find something, some parasitic disease or some other effect of malnutrition. We have not seen that.

*Q: Well, in a way this is good news.*

**DR. JOHNSON:** It's good news, yes.

*Q: Maybe pathologically it's kind of dull, but for the former prisoners of war this is good news.*

**DR. JOHNSON:** But it's possible that many of these people are really people of superb character and superb resilience, because they've borne through this terrible experience and have survived.

*Q: So the ones that didn't survive, it's sort of a selection process.*

**DR. JOHNSON:** Right, yes.

*Q: You had another registry, I notice, Gerontology?*

**DR. JOHNSON:** Yes.

*Q: What sort of developments have you noticed over the years in this field? Because this is becoming more and more important.*

**DR. JOHNSON:** Yes, it's more and more important. Unfortunately, we have really done very little with gerontology. I'm not a fellow who likes to split things off, and the aging person has many diseases, and the many diseases are being studied by the many specialists in the various areas, and I think that's fine. It's got cardiovascular disease, and we've got specialists that study cardiovascular disease. All I do is serve as a sort of a central point of collection. These cases all go in my registry and can be reviewed.

For example, once I made a review of patients over a hundred years old. We didn't have a lot of them, we had just a few. And I found that about ten percent of these people over a hundred years old died of leprosy. Leprosy, living so long. It looked like leprosy was the thing to make you live long. But it was just that these were patients from Carville, where they were well treated and they just kept them alive for a long time.

Incidentally, leprosy has been one of our great interests at this Institute, in spite of the fact it's not a military problem. But we had a great leader here, Dr. Chapman Benford, who did much in the area of experimental studies on leprosy and was instrumental in developing the armadillo model for leprosy. Because the armadillo has a little lower temperature and leprosy bacilli grow in this animal very well. And Dr. Binford made many important contributions in leprosy. Not only in the model with the



armadillo, but also with monkeys. There are some monkeys that get leprosy in the nose and ears and other cold parts. So there has been a great study on leprosy at this Institute. It's important.

*Q: Leprosy being often thought of as being...well, Polynesian, but also African. This brings up the international aspects of the AFIP. And, again, I go back through the whole reach of your work with the AFIP. Have you seen any developments, connections to various other countries, in the role of the AFIP?*

**DR. JOHNSON:** Yes, I think the role of the AFIP has been very, very important. In almost every important medical society there is some contribution of someone from the AFIP, active in the society business and active in programs of investigations. Very important, and I think it brings us many friends.

*Q: Do you have people coming in here for consultation from other countries?*

**DR. JOHNSON:** Yes, we have people coming for training. And one of the things that we regret lately is that this idea of charging people for training has crept in, not because we wanted to charge them, but because someone in the State Department (your former agency) has found some obscure regulation that makes it necessary for a person coming to a government institution to be charged. This is just terrible, we have been fighting it for a couple of years now.

*Q: Sounds like the accountants are taking over the world.*

**DR. JOHNSON:** Somebody, yes, has found this out, and it's very disturbing.

As far as my own experience, I have occasionally gone to various countries. The first big trip was when I went to Hong Kong, I guess in '74, to help start a program on an investigation on clonorchiasis, a parasitic disease that occurs and affects the liver and is found in fish, the parasite carried by snail and then into people. A very important disease; at least it used to be. Very common in the Orient. But I got to Hong Kong, we had trouble finding any of the infected fish. Snails, we could find them. But the fish in Hong Kong were raised in fish ponds; you've probably seen those fish ponds. You would see an open privy right over the water, and the feces discharged into the water, but for some reason we didn't see much of this disease. So I've been going back through Hong Kong almost yearly now, for the last ten or twenty years, just to continue my association with the University of Hong Kong where we started this work.

*Q: What about the diseases of Africa? I would think these would be somewhat of interest because of possible military action, or we have people there, and it's an area we're not accustomed to.*

**DR. JOHNSON:** Well, you name the country, and we've got someone who is probably

an expert on the diseases of that country. For example, the recent leishmaniasis experience in Desert Storm...

*Q: Desert Storm refers to the war against Iraq by a coalition led by the United States in 1991.*

**DR. JOHNSON:** Yes, and there are some of the very important tissue studies on the people who were actually hospitalized with apparent leishmaniasis, done at this Institute. We've got a man who just came back from tropical Africa, from Zaire, for example. Dr. Wayne Myers, our expert on leprosy, was also involved in other diseases. We have a laboratory in Zaire. It's closed right now because of political unrest, but it's been operating for several years, with observations on AIDS being done there. So we have close connections with many, many foreign countries.

*Q: Have you found that there is a lot of cross-fertilization from medical institutions of pathology overseas? Or has it been pretty much developed internally within the United States?*

**DR. JOHNSON:** No, I think cross-fertilization is very important, very important indeed. In fact, it was the infusion of certain foreign people into our own staff that gave us a great boost in the early sixties. With the introduction of Dr. Bahr and Dr. Zeitler, both from Germany, it made an important contribution in the area of biophysics.

*Q: What were their particular specialties?*

**DR. JOHNSON:** It was an area which they defined as quantitative electron microscopy, initially. And that is actually to look at something and get a weight of how much it weighs by looking at the character of the image on the electron microscope and making certain measurements. And they could, for example, weigh a single red blood cell, or weigh a single nucleus from a certain kind of cell. It was very, very interesting and very demanding work. Dr. Bahr was here until just a few years ago, when it turned up... You remember when they were having trouble at the Naval Medical Center with that doctor who was having poor success with his surgery.

*Q: Yes, there were some malpractice suits against a doctor, and a claim that he was not qualified.*

**DR. JOHNSON:** Yes, well, it turned out that Dr. Bahr, the chief of our biophysics group, did not have a U.S. license to practice medicine. And at his age, you just can't go out and get a license right away. So the administration actually turned him away, he had to leave. He went to Europe to practice.

*Q: What a tragedy.*

**DR. JOHNSON:** Yes. His coworker, Dr. Zeitler, was not a physician but a Ph.D. in biophysics, and he left here when Bahr left and he went to the University of Chicago. He did very fine work there, and then finally went to Germany as the chief of the most famous institute of electron microscopy in the world. So he was a really great guy in his field. But we've had many people come from Europe who have done tremendously well here.

*Q: How about...until recently it was called the Soviet Union, now it's a conglomeration of...whatever, we'll call it the former Soviet Union. There was a lot of touting of medicine; they've always turned out very good scientists, but were you getting any reflections from this?*

**DR. JOHNSON:** We were not getting a lot. For example, we even imported a Russian electron microscope just to see what the state of the art was in Russia. And Dr. Zeitler, our great physicist, worked with this instrument. It took a full-time physicist to keep the thing going. It was just that it wasn't really, I guess, state of the art. It looked okay, it was shiny and all that. It was intended to be able to look at living cells, they said. But to look at a living cell, you make a sandwich of it and put it into a special little envelope and it goes through the envelope; you don't get a very good image. Anyhow, the microscope wasn't very good. We have not had a lot of contact with the Russians, but we've had some.

Have you talked to Dr. Mostofi yet?

*Q: Yes, I have.*

**DR. JOHNSON:** He is the guy that's been more places and had more contacts than anyone that I know of. He's certainly made several trips to Russia. He knows our foreign relations; he's our ambassador.

*Q: Speaking about foreign relations, it's not quite the same, but this is your fortieth anniversary here with the AFIP. What about relations with Congress? Have you had any people you know in Congress who have been helpful, or are you aware of the importance of Congress as far as support for the AFIP?*

**DR. JOHNSON:** Yes, I'm aware of the importance, but I've had no personal contact with anyone of that stature, and have had, I'm sure, no direct influence on anything that Congress has done. But Dr. Lent Johnson certainly has, I think, a very important role. And when Kennedy's son had the amputation, Lent gave significant information regarding the clinical management of the case of young Kennedy.

*Q: Senator Edward Kennedy's son.*

**DR. JOHNSON:** Yes, that material was very carefully studied by Lent, and he rendered some very important medical opinions on the management of young Kennedy's problem. So there we have a good friend in Congress. And there are a number of other good friends in Congress, but I've not been related to any of them.

*Q: Well, you mention that you've from time to time worked on the Museum. I have that at one point you were curator, in the eighties. What was the state of the Museum when you were working with it?*

**DR. JOHNSON:** It's hard to say. It was not too much different from what it is today. But my predecessor was... (I'm trying to say it gently) he was a physician and a lawyer interested in related things to medical/legal things, I'm sure. But he was, in my opinion, not a good manager for a museum. He had a poor attitude for artifacts and managed to discard many things which I thought were valuable. So when I came in as curator I certainly tried to help preserve some of the artifacts and encourage the contribution of certain other collections to the Museum, which I think are of value. But I was the caretaker and not the guy expected to spend full time at that job, although I would like to have, as sort of a hobby, just to run the Museum. But I was more interested in working in the laboratory, so it was a part-time job with me. And then Dr. Micozzi was found, and his credentials looked very good on paper, so he was appointed.

*Q: What do you see as the function of the Museum?*

**DR. JOHNSON:** I see the Museum as an important place for training the public in matters relating to health. And I can think of my own experience going into that Museum and becoming interested in a profession, in a career in health matters. So I think it's important to be able to give the public some idea of what they have and maybe how they got it.

*Q: What type of things do you think, as you looked at it, were particularly good at reaching out to the public?*

**DR. JOHNSON:** I can think of my experience as a young kid going to that great Museum and just standing there looking, and then there were some exhibits of things so you open them up and look, one after another, pictures of the progress in the healing of a severe war wound, for example. It was fascinating to me, though I never had any inclination to be a surgeon. I think it's important to have things that people can touch in a museum, and approach it from that point of view.

*Q: Well, you must have been through, over a period of time, seeing it was either the disease of the week or there is the crisis, and some of these, I don't want to denigrate them because they are major, but right now we're looking at the devastation that's coming from AIDS. One that came up, it certainly has always been around, but since the*

*1964 surgeon general's report on smoking, have you been involved in any of these particular...?*

**DR. JOHNSON:** No, nothing specific on those topics, no. We've always had some exhibits relating to smoking, but no direct frontal attack on smoking. That's come later, I think, with, especially, Koop, who really pushed these public health matters. And he continues to be advisor.

*Q: He was the surgeon general of the Public Health Service. Did the AFIP get involved with AIDS early on?*

**DR. JOHNSON:** Yes, the AFIP was very early involved in public education. They founded a major undertaking, a major exhibit which displays some other things from the Museum, but it's a major exhibit still in place in our maze. A very important topic.

*Q: We're doing this in the TV studio of the AFIP, and I'm trying to get a little glimpse of how the Institute worked in its earlier years. I understand that you, at least, saw how the early TV studio worked. Could you tell us a little bit about that?*

**DR. JOHNSON:** Well, I worked closely with them in their efforts to get television microscopy started. But I was even involved very early when it was undecided what type of color system we'd have here, whether the RCA system, which we have, or the CBS system. And it was a great debate, all kinds of problems and all kinds of trial of different devices, and fortunately this type of equipment prevailed. But I saw that happening. This studio was really a major television studio at one time. There were productions with casts of 50 or 100 people in various sorts of things.

*Q: What sort of productions were put on?*

**DR. JOHNSON:** Oh, things like mass casualties, demonstrations of how to take care of wounded. You'd go into the cafeteria one day and you'd see people in fatigues and their faces all dirty; they were part of the cast. That went on for a few years and then disappeared, because it was a very expensive proposition.

*Q: I was also told that this was also used by WETA, a television station.*

**DR. JOHNSON:** I wasn't aware of that connection. I wouldn't be surprised. And it used to beam out to the Navy and to Andrews Field and other places. I don't think that continues anymore.

*Q: Well, I wonder if this is something we might just sort of walk through. Here's a list of some of the directors, because I think it's interesting for those who come later on to get a feel for how this place has been run, and your impression of major events. Could we sort*

*of walk through? You came in with General DeCoursey.*

**DR. JOHNSON:** Yes, I came in with DeCoursey, yes.

But the first person here that I contacted, way back in the medical school days, was Colonel Gilmore, who was a former curator. And I saw him later in the surgeon general's office. When I was trying to arrange about getting into the Army, I talked to Colonel Gilmore.

And, of course, Colonel Ash I saw on many occasions. When I had problem cases at Howard University Hospital, I'd come down and see Colonel Ash, and he helped me, always of great help.

General Dart I had no contact with whatsoever.

And General DeCoursey, a really great guy, and he was my director when I first came.

*Q: Where were his major interests, would you say?*

**DR. JOHNSON:** It's hard to say. He was, in the first place, a very good pathologist and, I thought, a good administrator in general, too. A guy who would see you at a meeting ten years after he saw you at the AFIP and remember your name. He was that kind of guy, and also his wife was a person of tremendous memory. He was a really outstanding guy, and on occasion would play the piano and do other things. A very human and a very, very, very warm person. He's still alive and, as of last... pretty well.

Captain Silliphant was our first Navy director, and I certainly had close contact with him.

*Q: How did that work? This had always been sort of an Army institute and all. Was there a little bit of straining when he appeared?*

**DR. JOHNSON:** I don't know if there was any straining or not. Silliphant was a very quiet and a very retiring guy. He had been a prisoner of war in Japan, and was, for that reason, I guess, a little bit different than most people. And, of course, he got very upset when any Japanese would show up at the Institute; he just had no love for them at all. So his directorship, in my experience, was one not of any great change but of continuing the tradition.

And then Colonel Townsend came along. A very dynamic individual and, much like General DeCoursey, a very friendly and outgoing individual, who would occasionally put on a hat and white gloves to make an inspection. He was occasionally military, but in general he was a very fine person. He still is with us; he's a member of our Board of Governors, as a matter of fact, a very important figure there.

Then the greatest director of recent years, General Blumberg.

*Q: That's Joe Blumberg, who was director from 1963 to 1967. His name comes up often.*

**DR. JOHNSON:** Yes, that was, I think, the golden age of our institute.

*Q: How did he operate? What were his interests?*

**DR. JOHNSON:** He would walk around, no matter what you were doing, he'd find out what it was and he could give a talk on your work--better than you could give yourself. He just had that kind of a mind. Very close, careful observation.

*Q: Was he pushing any particular areas?*

**DR. JOHNSON:** No, he gave you the freedom to do things, and then he expected you to do them. An unusual person. I can't say enough about Joe Blumberg. Actually, he got involved personally in the study of muscle disease, using histochemical techniques. That was one of my first contacts with him when he first came. And we're very cooperative in working together on certain problems in muscle. And he did some fundamental studies on muscle structure, as the, I think it was, deputy director then when he started that laboratory.

Now we come to Captain Smith, Navy. And I can't remember anything particular that Captain Smith did other than that he continued his research interest and published papers on certain urologic things while he was still director. A very friendly guy, again, but Blumberg was a tough act to follow.

Morrissey, our Air Force director, was a very disappointing person.

*Q: He left in a huff.*

**DR. JOHNSON:** He left in a huff, yes.

*Q: Could you explain how you saw his tenure.*

**DR. JOHNSON:** Let's see, how long was he here?

*Q: Two years, '71 to '73.*

**DR. JOHNSON:** Yes. I can't really say anything about the guy. I knew him pretty well, but he didn't do anything good, he didn't do anything right. And when he left, he wrote a letter criticizing the Institute and recommending it be transferred to another agency. Terrible.

Then we come to the Army again and Colonel Hansen. As a matter of fact, when I was assigned to the AFIP first, in 1952, I was supposed to go here and then report to a Major Hansen at the 1st Army Lab in New York. That was where I was going to be assigned, but I never got there. So finally, in '64, I met Colonel Hansen in Thailand. I was on my trip to Hong Kong then, and I stopped by to see him, reported, saluted, and said, "Captain Johnson reporting, sir. I'm a little bit late getting here." But he was down

on the beach having a little vacation. A very nice guy, who got caught up with some trouble we were having with the surgeon general.

*Q: Could you explain, as you saw this, this was with the Registry of Pathology, with the universities.*

**DR. JOHNSON:** Yes, universities associated. There was something a little not so good with the way they were handling the funds. And I don't know anything about how the funds were being handled, but I do know that Colonel Hansen got nailed for things that he had nothing to do with. It came before his time, and then he was doing everything he could to straighten things out. But he survived, and I think he did a good job as director. All of us liked him, as a matter of fact.

Then we come to Captain Cowart, a great Navy guy and, I thought, a good director. He had the experience of being curator of the Medical Museum. In fact, he was curator when the Museum was closed; it was one of his tasks to close the Museum downtown. I think he did a good job. He came back to us later as the head of the American Registry of Pathology. He was, I think, one of their early directors, who was well received by staff on that occasion. Now he's retired.

Now we come to the Air Force again. Colonel Cowan was a fellow that didn't leave a great impression on most of the people here, but he didn't bother anyone. He had a very calm administration, and we appreciate that.

Colonel McMeekin was sort of a younger type of guy and trying to shake things up in many respects, but, again, a good, decent guy. No problems with him. He left here and went to the Federal Aviation Administration as the air surgeon, and now he's moved on to another job.

*Q: He's at Fort Meade, commander of the hospital there or something.*

**DR. JOHNSON:** Yes, and we expect he'll be a general one day.

Then Dr. Karnei, our most recent director, did many things to shake people up and shake the place up. He has friends and enemies. I think, in his way, he always tried to do the right thing, but he wasn't always right, because always the judgment doesn't necessarily mean that there is only one way of doing something.

*Q: Well, I take it, the Institute, like any other institute, you do have these people who are experts in their field and have been doing it for a long time, has to be a very difficult place to administer. To change course, or to adapt, or to feel that it has to adapt or not, has to be a major administrative problem.*

**DR. JOHNSON:** Sure. I think we all appreciate that when we think about it. But sometimes, when the guy's doing something, we say, aw, what did he do that for?

And, of course, now we have a new director...I can't even remember his name.



*Q: Well, a couple of sort of last questions on this, doctor. First of all, if a young man or woman comes to you and says I'm thinking of being a pathologist, in the first place, what do you think makes for a good pathologist, and what do you think about it as a career today?*

**DR. JOHNSON:** I think it takes all types to make a good pathologist, and I think it is an excellent career for anyone that's interested in investigative work and careful study and scholarship. I think it's good, and I wouldn't hesitate to recommend it to anyone that has the inclination to study and to think and not make hasty decisions but careful, careful decisions.

*Q: And finally, looking over your time at the AFIP, what thing or things give you the greatest satisfaction?*

**DR. JOHNSON:** I suspect, that period under General Blumberg when the laboratories were all flourishing and doing good things, that was my most interesting time.

*Q: How do you see the AFIP today? Do you see its role diminishing as, say, other institutions, universities and all, are picking up? With the diffusion of information, things have changed, haven't they?*

**DR. JOHNSON:** Yes, I think much of what the AFIP used to be famous for and necessary for was expertise in diagnostic pathology, and I think almost every major medical center has experts in the various fields of pathology, and we're certainly less necessary now than we used to be. And as far as experimental work is concerned, every major university has excellent experimental programs. I don't think we can touch them there. And the National Institutes of Health certainly has excellent experimental programs in all phases of what we call pathology. Because much of what is medicine, or what is investigative studies, is pathology by a broad definition. So I can't predict what's going to happen to this Institute.

*Q: Where do you feel the greatest strength of the Institute rests today?*

**DR. JOHNSON:** I think, to have in one place experts in almost every area of pathology. It would be unusual for a single university to have an expert in every single organ system, as we have here. I think that is one of our great, great advantages.

*Q: Well, I want to thank you very much, I've enjoyed this.*

**DR. JOHNSON:** Oh, my pleasure.