ARMED FORCES INSTITUTE OF PATHOLOGY
ORAL HISTORY PROGRAM

SUBJECT: Dr. F. K. Mostofi
INTERVIEWER: Charles Stuart Kennedy
DATES: January 22 and April 28, 1992

Q: Dr. Mostofi, I wonder if you could give me a bit of your background, where you were born and educated.

DR. MOSTOFI: I was born in Iran and educated in a missionary school there. I came to the United States in 1931 and went out to the University of Nebraska, in Lincoln, Nebraska. This was one of the best things that I could do, because people there had not been in contact with many foreigners, and they could not be kinder and more hospitable than they were. After four years at the University of Nebraska, I went to Harvard Medical School, in Boston, and I was there for four years and graduated in '39. I had a year of rotating internship, and then I thought I would take a year of pathology. But one year of pathology turned out to be some forty years that I've been in pathology. From Boston, after my training, I went into the Army, and I was in the Army for three years, most of the time running a big Army lab in a big hospital.

Q: Where was that hospital, doctor?

DR. MOSTOFI: Well, the first one that I went to was Birmingham General Hospital, in Van Nuys, California. And I kiddingly say that I fought most of the war from... of Hollywood. From there, I had a fellowship at the National Cancer Institute. And from there, I came to what at that time was the Army Institute of Pathology, because I had had an invitation from the director to join the staff after I got out of the Army. And I've been here since then, in charge of the Department of Genitourinary Pathology.

Q: I just want to go way back first. What prompted you to come to the United States? You were in Iran, you went to a missionary school, and all of a sudden you're going to end up in Lincoln, Nebraska. This was quite a step.

DR. MOSTOFI: Well, the reason for this was that actually to get any advanced education in Iran I had to have been through the Iranian school system. When I went to the American missionary school in my sixth year, at that time there were no secondary schools in my hometown sponsored by the government. But by the time I finished high school, the government had come in and said that to go the sixth grade you had to have the examination of the third grade, to go to the ninth you had to have the examination of the sixth, to go to twelfth grade you had to have the examination of the ninth grade, and to go to a university you had to have the examination of the twelfth grade. I didn't have any of these, because I had been going to an American missionary school, which was

essentially a private school although we didn't have to pay anything. And when the question came up as to what to do next, my mother had been opposed to my going outside the country, but when she found out that if I stayed in Iran I would have to go into the army, she then said go. So I came to America because I had learned English more than any other language.

Q: In what year did you come to America?

DR. MOSTOFI: Nineteen thirty-one.

Q: This must have been a difficult year; it was in the middle of the Depression.

DR. MOSTOFI: It was the middle of the Depression, and that was why I went to Lincoln, Nebraska, because depression hadn't as yet hit Nebraska. There it was not very difficult. I had to get a job because, in the meantime, the Iranian government, because of the Depression and so on, decided not to permit any money to go out of the country. So I had to work. And I was very fortunate, the Presbyterian chaplain at the university took a liking for me, especially since I had gone to a Presbyterian missionary school, and he kindly became as a father. And his wife got me a job to wait tables in a sorority house, which was an unusual thing for a non-fraternity person (a barbarian, as we used to call them) and a foreigner to be waiting tables for a bunch of girls in a sorority house. But that worked out very nicely. And from there, as I mentioned, I went to Harvard Medical School.

Q: You joined the Army Institute of Pathology in 1948. You had been with the military service, but you had also been working elsewhere as a pathologist. What was your impression of the Army Institute of Pathology at that time?

DR. MOSTOFI: My impression of the Army Institute of Pathology at that time was that if you wanted to know anything at all about anatomical pathology, that if you wanted to get anywhere, you had to join the staff in here. And for the three years that I had been in the Army, and the year that I had been at the Cancer Institute, I had become rusty in diagnosis, so I thought that coming to the Army Institute of Pathology, which later became the Armed Forces Institute of Pathology, that I could get the experience that I needed to be a good pathologist.

Q: When you arrived at the Army Institute of Pathology, what was your impression of how it was run and some of the personalities there who were sort of dominant within the organization?

DR. MOSTOFI: Well, we had a director, we had an executive officer, we had a personnel officer, we had the adjutant's office. And the director took personal interest in what you were doing.

Q: The director in those days was...

DR. MOSTOFI: General Dart was the director. And actually, two weeks after I arrived on the scene, he called me in and said, "I have a good secretary for you." And I had one of the best secretaries that I have had. She stayed with me for many years, and from my office she moved down to the deputy director's office.

At that time, we were given kind of leeway. I mean, the sky was the limit to what you wanted to do. So I became involved internationally, I became involved nationally; it led to being able to do a lot more than one could have done.

Q: What field were you dealing with at that time?

DR. MOSTOFI: Well, when I came to the Institute, actually I wasn't interested in urological pathology. But when I had my conference with General Dart, he asked me what I would like to do. I said that I would like to do GYN pathology.

He said, "I've committed that to somebody."

I said, "What about endocrine pathology?"

He said he had committed that to somebody as well. So I asked him what did he want me to do.

He said, "Urological pathology."

I said, "General, you wrote a paper on bladder tumors in 1936, Col. Ash has done work on bladder tumors, Dr. Friedman and Dr. Moore are working on prostate and testicle, what is there to do?"

And he said, "Sky's the limit."

And so I went to work.

Q: Did the Institute at that time work to make sure that every field was covered? Or was it people would come in and say, well, I'd like to do this, and so they kind of went off there, leaving areas uncovered?

DR. MOSTOFI: No, we didn't have any areas that were not covered. No, as I mentioned, I wanted to do something else, but the director said do so and so, and I did it, you see? So it was understood that if you came on the staff in here, you would have to do what the director wanted you to do. But the director gave you the leeway to develop your area.

Q: What sort of facilities were offered to you to deal with this?

DR. MOSTOFI: We were in the old Medical Museum downtown.

Q: This was the Old Red Brick Museum.

DR. MOSTOFI: The red brick building, which was torn down. At that time, when I arrived on the scene, I did ask the director that I did have to have a laboratory, because I'd been at the Cancer Institute and I figured, well, a pathologist has to have a laboratory in which to work, in addition to having an office. And the director said that he didn't have a lab to give me there, but that when we moved to the new building, I could have a laboratory. At the time when we were there, I had an office, I had a desk, I had a secretary, and I had space for two fellows and one assistant that eventually, later on, showed up. So that was the space. Now by the time we got here, this office was larger, we were given a laboratory, and I was able to staff the laboratory. Since I was on the Veterans Administration payroll, I was able to get money from the Veterans Administration to staff the laboratory. And we have had the laboratory since. And since about the sixties, the Army has supported this laboratory, plus some support from the Registry where we have some funds, and those funds have hired the technician. At the present, I have myself and Col. Davis and Dr. Sesterhenn, who are my two associates. and three staff pathologists; we have two secretaries in our department, and four technicians. We also have a division, which is separate from us but it's under me, this is medical nephropathology, and we have three people there. The senior pathologist there is on the VA payroll, the assistant pathologist is on the Army payroll, the secretary is on the VA payroll. So we have a joint staffing--military/civilian/Veterans Administration. And we have a Reserve Navy officer who comes in with us once a week or once in two weeks. She is at the present working at the Food and Drug Administration, but she comes in for joint research projects.

Would you like to have me tell you about what we are doing?

Q: Well, I'd rather like to come to that later. I'd like to go back to the early days. You said that when you arrived at the Red Brick building in 1948 you had an office and a little space, but no laboratory. I'm asking as a layman, and we're looking towards the future, to people who won't know much about what the AFIP was doing. What did you do? Here you had your specialty.

DR. MOSTOFI: You see, the lab support I needed was for the research work, we had a central laboratory and that laboratory did routine work for every department, what we used to call branches. And what I wanted to do was get involved in doing research. And for doing research, you have to have a laboratory. In the old Medical Museum, we didn't have the space for the director to give me lab space. When we moved out here, the director gave me three units, three cubicles, in which we did research. We did not do, and even today we don't do, any of the routine work there. That all goes to the main laboratory. What we do in our laboratory is devoted to research that we're interested in doing.

Q: But, again, going back to the early years when you were there, would specimens be sent in to you, and how would you deal with them?

DR. MOSTOFI: Well, what happened in those days was that the slides, the critical information, the pathology report, possibly the blocks and tissue were sent in. If we needed any extra work done on that material, that was sent to the main laboratory where they did the work. We do the same now. The same thing happens now, if need extra work, we send that to the main laboratory. But if we want to have a special thing done on it, like we're interested in immunopathology, or we're interested at the moment in trying to work with chromosomes, you have to have a laboratory to do that, you see? A special lab, because you can't give that to the main lab, to scientific laboratories, as we call them now.

Q: But to understand this, the samples would be sent in to you, the slides and tissues. In those days, you would send it, maybe, to the laboratory to do some further work, to work it up, but then it would come to you for your judgment?

DR. MOSTOFI: Yes, eventually I would write a report.

Q: This is what you were really doing, making judgments on this.

DR. MOSTOFI: That's right.

Q: And sending if off. How did you feel about the things that were coming in to you? Were you getting inundated with routine work, or were you able to look at the things that really would use your expertise?

DR. MOSTOFI: At that time, the Medical Museum and the Army Institute of Pathology and the Armed Forces Institute of Pathology had a program, on the Registry side, where we would get in bladder tumors from six or seven big centers, where they sent us the slides, they sent us the clinical information; that was part of the development of the Registry. In 1926 the American Urological Association came and asked the National Research Council, they wanted to have a center where the slides could be sent and the diagnoses could be standardized, because people were claiming that for bladder tumors all you needed to do was resect them; other people said that all you needed to do was give them radiation. And the American Urological Association was interested in trying to find out which was the best way of treating patients, so they established the Registry. Because of the fact that in those days the Army didn't have any bladder tumors to speak of, arrangements were made for some five or six major urology departments to send their bladders, every so often, to the Institute. Well, by the time I came on the scene, the Veterans Administration had come in as part of the AFIP, the Army was expanding it's activities, so I went to the American Urological Association and specifically said, "Please don't send me routine stuff. If it's an unusual thing, or if it's interesting, or if you have a question about diagnosis, please do. Otherwise, I don't want to be inundated by hundreds of bladder tumors." You see? So we stopped that, but the floods started from the Veterans Administration. And as the Army expanded its medical services, we started

getting material from the Army.

Q: You're talking about the Army expanding its medical services more to dependents and all.

DR. MOSTOFI: To dependents and retirees and so on.

Q: Because these tumors are less likely to occur in healthy men, is that right?

DR. MOSTOFI: Exactly. Also, one area that the Institute has worked on especially has been on testicular tumors. These tumors occur mostly in young people. And in fact, during the war, the Institute had collected a thousand testicular tumors, all of it from the Army, not the Navy (at that time the Air Force was part of the Army). So they had collected a thousand testicular tumors in a period of something like four or five years. And so that was one of the major problems that we had from the military. But at that time, we didn't see too many bladder tumors or prostate tumors or kidney tumors from the military. But these came from the Veterans Administration, and also from civilian sources, whereas we had told them to send us unusual, interesting, educational cases and so on.

Q: Again, I'm still sticking to the very early years. How was your relationship with the various universities and research laboratories, in your field?

DR. MOSTOFI: Well, this went along several lines. One was that we used to have consultants come to the Institute for a period of a week or two weeks and so on. The National Research Council had a Pathology Committee, and we worked very closely with them. Thirdly, we worked with the registries. The registries were sponsored by the various national societies. And, as I mentioned, the American Urological Association (AUA) sponsored the urologic registries, for which they gave us a certain amount of money and we were supposed to examine material that was sent in when the urologists had a problem with a diagnosis, or the pathologist who was doing the work had a problem. And so we were consulted, and then we prepared the report and sent it out.

Q: Well now, in a way, you were acting as a peer group. Would this be sort of considered close to the definitive diagnosis when it came through here?

DR. MOSTOFI: The diagnoses that we gave, I think almost all the time, were accepted by the pathologists. Because in making a diagnosis, if we disagreed with them, we had to give reasons as to why we disagreed with them. And, by and large, they accepted it. Also we had the advantage that, for example, within a year or so I had seen several hundred of this tumor, several hundred of that case, and so on. And the pathologists in the field, well, at the Massachusetts General Hospital, where I had been as a staff pathologist

before I went into the Army, at that time they had maybe a dozen testicular tumors in the files. We had a thousand. And people knew that we had this resource here. And because of that, it was assumed that since we had such exposure, that we knew more about the subject than they did in their small laboratory.

Q: Was there any type of peer oversight? And not just you, but others were dealing with their specialties here and giving out these decisions. Yet there must have been times when you must have been unsure. Were people looking over and saying...I'm not talking about just you, but the others, you understand--to say maybe you're...

DR. MOSTOFI: Yes, we did worry that perhaps we were wrong or we did not know what it was. Fortunately, we had other pathologists who were consulted on the spot. We had outside consultants, members of the Pathology Committee of the National Research Council, and other consultants. For example, in my own case, since Robert Moore and Dr. Nate Friedman had done a lot of work on testicular tumors, when I got testicular tumor that I wondered what it was, I consulted with them. But we did not have anybody come in and check what we were doing and how we were doing and so on. That function was left to the chief of pathology, who at that time was Dr. Smetana, or to the director. In those days the director saw every letter that went out. If the letter didn't make sense to him, we were called in and the letter was often changed to make sense.

Q: The director was still General Dart?

DR. MOSTOFI: General Dart. Well, as a matter of fact, for many years, the directors did sign all the letters.

Q: I'd like to get just a little feeling of sort of the in-house atmosphere, again at the early time. Did you find that there was a problem of one branch getting more attention or more support than another branch? Was it a collegial atmosphere, or was it one of infighting?

DR. MOSTOFI: It was a collegial atmosphere. The branches that got more support and so on were the branches that got a large number of cases. Now, also, when I came on the scene, the policy was that you did not keep any assistant pathologists for more than two years.

Q: Why was that?

DR. MOSTOFI: Because, they said, by that time he had learned everything he wanted to learn from you and you gotten everything out of him that you wanted to. I took a different position in there, I said that I needed somebody who could take over from me if I dropped dead. So I was the first person in the Institute who was able to get permission to keep my assistants for more than two years.

Q: Again, going back to this time, what did you feel was the purpose of the Army Institute of Pathology? Because there were several things going: there was the museum, there was the consultancy, there was also education, and research to some extent.

DR. MOSTOFI: Well, let me tell you about how the thing developed. What happened was that the Medical Museum, as you undoubtedly know, was started by Surgeon General Hammond, who wanted to have any amputations or any autopsies or any tissue that had been removed from a soldier to be sent to the Army Medical Museum so that future generations of medical officers could study this. This went on until the 1920s, at which time a gentleman by the name of Major George Callender (who later became General Callender), Callender was the first pathologist who was appointed to be the curator of the Medical Museum, he decided that the museum was lopsided; all we had was material essentially from the military, although even at that time, since the Army Medical Museum was the only medical museum in the country, a number of people did send things in to the Medical Museum. So Callender became truly conscious that something more had to be done with this Medical Museum. He went to the National Research Council Medical Division and told them that he needed to bring civilian medicine into the Medical Museum.

Simultaneously, the American Academy of Ophthalmology had gone to the National Research Council and said that they were enucleating eyes, and pathologists did not know how to manage these specimens. They wanted to have a center where these eyes could be sent in and properly examined.

So the chief of the Medical Department of the National Research Council put the two together, brought Dr. Callender and the Ophthalmology Society. And he got permission from the secretary of war for the Museum to do this.

Following that, the American Association of Pathologists and Bacteriologists came to the National Research Council and said the same thing. And so they established the Lymphatic Tumor Registry.

The urologists came in about 1926, and, together with Dr. Callender, through the National Research Council, and established a Bladder Tumor Registry.

Now with the Bladder Tumor Registry, the purpose was to relate pathology with treatment and with follow up. With Ophthalmology, the desire was to have a place to send the specimens to be properly examined. For the Lymphatic, they wanted to collect the specimens so somebody could come and study them and come up with the correct classification. So the purposes of the registries varied.

Then, after that, some ten or fifteen registries were established, and these were all under the auspices and support of the National Research Council. And to get the work done for various registries, the associations agreed to give a certain amount of money. For example, the ophthalmologists gave three hundred dollars to the National Research Council, which then hired a technician to work with Dr. Callender and process the eyes. The urologists gave the registry three or four thousand, or something like that, to do the work that they wanted the Museum to do for them. All these monies went to the National

Research Council, because they couldn't go to the Museum or to the Institute because then it would become government property and they wouldn't have any control of it.

In 1931, because there were about a dozen or so registries, the National Research Council decided that there would be an organization called the American Registry of Pathology, and these registries would be under that, and the headquarters of the American Registry of Pathology would be at the Institute, and the director would be the director of the American Registry of Pathology.

Then, when General Dart took over, Colonel Ash retired, the American Registry was set up as a department of the Institute, with Colonel Ash as the director of that.

When he retired, then Dr. Hugh Grady became what we used to call the scientific director of the American Registry of Pathology.

After Dr. Grady, who was director of that for several years, I became the director of the American Registry of Pathology, simultaneously keeping my job as the head of the Urological Pathology Department. I gave that up in two years, and then we eventually got somebody else who ran the Registry.

Q: What was the relation between the Registry and medical schools? Was there some concern about this being in the hands of a military organization?

DR. MOSTOFI: No. Actually, many of us, from the beginning, had appointments at medical schools. For example, I had an appointment at Johns Hopkins, and, a year or so later, I had an appointment at Georgetown as professor of pathology. And almost everyone on the staff had such an appointment, so we did work very closely with universities, with pathology departments, and, in my case, with urology departments, and, in later years, with the oncology department, with the radio therapy department, because my work, my diagnoses and so on, was reflected in their activities.

Q: Were you able to use the research facilities at Georgetown or Johns Hopkins? Did they have research facilities in your particular field?

DR. MOSTOFI: Not very much. Now, for example, I was on the Hopkins staff, well, I gave a lecture or two to the medical students, I went to their weekly pathology conferences, and if there was anything that had to do with my area of interest, I was asked to comment on it. But various registrars, various department chiefs, sometimes had less, sometimes more contact with the clinicians, with the medical schools. And then also we would get invited to give lectures or give conferences at various medical schools, nationally and internationally. Also we would be invited by societies to give a talk, participate in a symposium, participate in a conference.

Q: Some of the most interesting specimens were coming to you, but for research you still did not have much in the way of laboratory facilities. Where was sort of the cutting edge in your field as far as research went, and how did you and your staff absorb this?

DR. MOSTOFI: The cutting edge at that time was to improve diagnoses, and the Institute was able to provide this. Because if some pathologist somewhere saw a testicular tumor and he didn't know what it was, we knew what it was nine out of ten times. The next step was to write papers on this, to prepare reports to be published in peer journals, and we did that. Now the more you published on a subject, the more famous you became. So the people would have something and they'd say, well, you know, I think that that's what Mostofi described. So they would send it to Mostofi to look at it. Or if they saw a skin lesion, they sent it to Dr. Helwig. Or if they saw a bone lesion, they sent it to Dr. Lent Johnson. Or if they had a liver biopsy or liver lesion, they sent it to Dr. Smetana, who was in charge of our liver diseases.

So it worked both ways: we got the experience, but simultaneously we passed the experiences, our knowledge, to everybody else.

Q: What about developments overseas? Was the United States absolutely preeminent in what you were dealing with, or were there other areas?

DR. MOSTOFI: Well, before the first war, Germany and Austria were the centers of pathology. France has never been. England, in certain areas. But there was nothing like the AFIP, where there was a center where hundreds of cases would be sent in. Internationally we were recognized, because, way back in 1957, I was asked to be a member of a committee of the International Union Against Cancer for Clinical Staging of Urological Tumors. Now we're talking about 1957, so already by that time the Institute had been recognized as knowing something about the field, as being interested in these areas, and being able to relate pathological findings to the clinical picture.

Now I was not the only one who had this sort of a relationship. Also, for example, several of our staff were members of the World Health Organization's international activities in standardizing histological classification. At one point the World Health Organization asked the U.S. Health, Education and Welfare Department, HEW (because the World Health Organization works with governments, it doesn't work with individual pathologists or individual institutions), and they asked the Institute if we would take over the program of international histological classification of bladder tumors. I countered by saying that we would do it provided we did all the urology--kidney, bladder, prostate, testicle. They said yes. Then every year they gave the Institute a certain amount of money to do this work.

And the work involved this, that initially the WHO would have a meeting of people that WHO had selected as being the specialists in the field. And I was the chairman of these various groups. We had one group on bladder tumors, one group on kidney tumors, one group on prostate tumors, one group on testicular tumors. And each group got together and decided on a provisional pathological classification. The center was to send this classification, and slides illustrating the point, and let the members of the scientific board review and comment. We would have a second meeting and semi-finalize the classification. Then that classification would be sent to another group of people, who had not been initial members of the WHO panel, for criticism. Then the

results were published. And they were published in what is called WHO Bluebooks on International Histological Classification of Tumors. Now I authored four of those. These were in English, they were translated into Russian, French, and Spanish. And these books, plus Kodachromes illustrating the lesions, and sometimes microscopic slides, were sent, free of charge, to every medical school in the world. So the pathology departments, the libraries of every medical school in the world, had access to this material.

Simultaneously, we had established the International Council of Societies of Pathology, which was like the International Council of Churches, where every pathology society in the world could join this. Early in the game I became the secretary of that. So the World Health Organization would send me somewhere about a hundred sets of two by two's, (Kodachromes), and books to distribute, free of charge, to pathology societies throughout the world. We required that they use this in their educational program. The Institute has received a number of these, because we have a service in here where anybody can write and ask for a teaching set and we send them the material to study.

So this is how what we learned was passed on.

Q: Well, it sounds like a very enlightened way of dealing with this. This bothers me a bit; I would think that there must be somebody up there...

DR. MOSTOFI: Looking after the whole thing.

Q: Who was in charge and saying this is all very good, but what does this have to do with running an Army Corps?

DR. MOSTOFI: Well, that's very interesting, because actually the medical department of the Army has been in the forefront of developing international programs and working internationally. Some years ago, I was invited to give a talk about the contributions of the military to international health, and sometime I should give you a copy of that paper that I wrote as to various people throughout the years, throughout generations, where the medical department of the Army had been active in international health. I should mention that the U.S. Navy has also contributed much to international health.

When the surgeon general, General Hammond, went to Secretary Edwin M. Stanton and said that he wanted to establish the Medical Museum, he said fine. When the surgeon general decided to establish an Army Medical Library, Stanton said fine. The Surgeon General came back and said he wanted to establish and Army Medical School. Secretary Stanton came, looked around the old Army Medical Museum (not the red building, because we didn't have that), and said, "No, if they have a school, they'll be sitting around chewing gum or smoking." So he vetoed the school, but he let the surgeon general establish the Museum, the Library, and two other things. One was that he permitted the surgeon general to require that whenever a soldier was seen in a clinic or in a hospital, that there would be a record kept. The fourth thing that the surgeon general, Hammond, did in the three months that he was surgeon general was to set up a committee to write the medical history of the Civil War. That went on, we have a medical history of

the first war, and we have a medical history of the Second World War. So that has gone on.

So I think that one can say that the United States Army has been in the forefront of not only taking care of the Army's health, but nationally and internationally. And it's the vision of these people.

Q: Well, it's very interesting to think that this has continued for this period of time. Knowing bureaucracies, this shouldn't happen.

DR. MOSTOFI: That's right. No, it's an amazing thing really. One can't help but admire... You see, whenever I go internationally to give talks and so on, like I was in China, the Chinese knew that I was working for the Armed Forces Institute of Pathology. Actually, I was invited by the Basic Medical Science Institute of China, but the Chinese army took me over. I gave lectures, I was put up in army quarters and so on. They all knew that I worked for the Army, I was a civilian.

Q: Well now, with what you were doing, and, again, I'm still concentrating more on the early period, you had both, you might say, the consultancy, then you also had the Museum and the education side.

DR. MOSTOFI: And the Registry.

Q: Well, the Registry you've talked about, but how did you, when you first arrived and over a period of time, view the Museum? This is the thing that everybody, myself included, remembers back in the late 1930s, going to the Red Brick Building and looking at General Sickles's leg and all. How did you view the Museum, and how did it fit in?

DR. MOSTOFI: Well, we thought that the Museum was of great value to us for several reasons. One was, it established our relationship with the public. Because in those days we used to have a million people come through the Medical Museum.

Q: I went there in my knickerbockers.

DR. MOSTOFI: That's one way that it helped us. The second way, in those days we requested that anyone who had an unusual specimen which could be used in a museum to please send it to us, and that was put in the museum. So we had the public museum and we had the professional museum, you see, where one could go in there and look at twenty, thirty, forty, fifty heart diseases. This was available there. Anyone, any pathologist or any physician anywhere in the world, could come and study that material.

Simultaneously, provisions were made for anyone who wanted to come and study a group of cases at the Army Institute of Pathology, or Armed Forces Institute of Pathology, they were allowed to do it. Now we had to have a certain amount of control over these, and the control was that they had to work with one of us. And nobody minded

this, because we were giving them a whole lot more than they were giving to us, you see? We were making it possible for them to do their research. As long as we were in the old building, the only research they could do was to look at the slides from human patients or animals, study the cases (slides and clinical history) and write papers. When we moved to this building, we then had facilities to do more than that.

Now what do I mean by more than that? For example, we were very much interested in what is called acute renal failure. When you go into shock, or when you get a bad transfusion, or when you swallow mmercury and so on, your kidneys shut down. What is the mechanism of that shutdown? You could approach the problem in two ways: one was to look at human material; the other one was to try to do experiments. And we started doing experiments with rats. From there, we went to monkeys. Some years later we were interested in the radiation effects on the kidney. The reason why we were interested in this was that the patients who have testicular tumors (and as I mentioned, the Army had a large collection of testicular tumors), certain ones of these patients got radiation to the retroperitoneal area. There were reports that many of these patients developed kidney disease, what we call radiation nephritis. Well, we were interested in working on that. For that, what we did, we got dogs and we brought the kidneys out under the skin, we radiated one area of the kidney, and we studied the development of the lesion.

In my own department, the Veterans Administration started a very important research program, and that was on treating cancer of the prostate. Many, many years ago, in the 1930s, thereabouts, Huggins and Hodges in Chicago came up saying that patients who had prostate tumors should be given estrogens to control and to cure. There was a lot of discussion about this, so the Veterans Administration established a research program where a number of veterans hospitals would get patients with prostate cancer, they would treat them in one of four different ways. If at any time any of the treatment modality didn't do any good, that was considered as failure of that therapy and the patient was treated any way that the urologist thought helpful.

We were asked to participate in this. And I requested, and they agreed to let us see all the slides of these patients, their biopsies, or transurethral resections. Also, where a total prostatectomy was done, to let us have the specimen. And what we did, we cut step-serial sections and studied large mounts of the prostate. We collected over two thousand prostates and over two hundred total-prostatectomy specimens. These specimens are available today, and they have been available, for anybody, from this country or from overseas, to come and study them. We have had three Japanese doctors who have come and studied these, and they are still studying them.

To be able to do this, you had to have the facilities, so the Veterans Administration gave us the laboratory personnel to do the lab work, and gave me an assistant pathologist to help me.

Q: When you moved away from the Army into the Armed Forces Institute of Pathology, did this make a difference? Here you're talking about this sort of very forward-looking Army administration, you were comfortable with this, and all of a sudden you have the

Air Force, a brand new service as part of the Army, and you have the Navy, which has its own traditions and all. How did this impact on you as a specialist within this organization?

DR. MOSTOFI: Well, it essentially increased our consultation activity, but not a whole lot, because even today we get many more cases from the Army and from the Air Force than we do from the Navy. Every so often somebody from the Naval Medical Center will run over here and bring us a slide and ask what do we think about it.

Q: This is what is known as Bethesda, is that right?

DR. MOSTOFI: That's right.

Q: In a way, were they running their own show pretty much?

DR. MOSTOFI: No, they have never had a center. Each hospital in the Navy handled its own cases, and if they needed help locally, they got local help from pathology departments or pathologists in the neighborhood. So, as far as I know, the Navy has never had a central laboratory; we have served as that. And from time to time, some of the Navy people consult with us. A lot more don't give a damn.

For example, the Navy hospital in San Diego decided to do certain research on prostate cancers. What they wanted to do was to correlate nuclear magnetic resonance and ultrasound of the prostate with what the pathology showed. So they came to us and and asked for help. So we had to get the commanding officer of the Navy hospital, the pathology department there, the radiology department of the University of California, San Diego, who were doing the x-ray studies, and, all in all, everybody agreed that we should do it, and we did it, and we're still doing it.

Q: Again, I'm talking as a layman from outside, but it sounds like the marriage of the Navy into the Armed Forces Institute of Pathology was not quite as complete as one might think.

DR. MOSTOFI: Well, it's complete to the extent that we always have had a Navy director or a Navy deputy director, but beyond that it really hasn't worked as originally planned. But you also have to realize that actually the Navy doesn't have the medical setup and so on that the Army has; the Army has bigger medical services.

Q: Why is this?

DR. MOSTOFI: Well, the Army has more soldiers.

Q: Well, what about the Air Force? The Air Force was part of the Army until 1947, so did they just sort of continue on?

DR. MOSTOFI: I think the Air Force works very closely with us, more closely than the Navy, not as close as the Army. Well, again, that depends on the departments and the hospitals and so on; some of them work very closely with us, some of them don't. But if there is any question, then we get involved in it.

Q: You act as the *consultancy for the armed forces.*

DR. MOSTOFI: Also for the Veterans Administration. For example, if there is any claim case against the Army, Navy, Air Force, or the Veterans Administration, we get involved in it. Now we don't get involved in medical legal problems for civilians, but we do with the government. As a matter of fact, just last year I was involved with the Justice Department, because somebody was suing the government because they maltreated a prisoner. So, as far as the government is concerned, we are consultants to the whole government. With the State Department, they call us to send a team to investigate aircraft accidents.

Q: So this sort of spirit of being the *repository for anything dealing with the government spills over into the civilian agencies too. It makes very good sense. Have there been any battles or rivalries that you can think of with other institutions? The Veterans Administration is comfortable with this?*

DR. MOSTOFI: No, we have had no problem. You see, the first head of the Veterans Administration laboratory service was a retired Army general, General Callender. He had a vision initially to bring civilians into the Medical Museum, and when he was in the VA, he brought the VA into the Institute.

Q: And so it's always been a comfortable relationship.

DR. MOSTOFI: It's been a very fine relationship. Well, the VA, as a matter of fact, I think, supports the Institute by half a million or so every year, not in terms of money, but in terms of people.

Q: Doctor, why don't we cut this off now, and we'll continue this at a later date. Thank you.

DR. MOSTOFI: I enjoyed being with you.

Q: This was fascinating.

DR. MOSTOFI: I hope I haven't bored you.

Q: Oh, you haven't bored me at all.

Q: Today is April 28, 1992. This is the second interview with Dr. Mostofi. Doctor, looking back on the forty years that you have been with the Institute, have you seen a change in priority in what the Institute does, or has it remained relatively constant?

DR. MOSTOFI: Both. What has happened is that when I first came to the Institute, the emphasis was primarily on consultation, secondarily on research. As the years have gone by, that emphasis has remained, but other values have come into play. For example, there is more interest in education--education both in-house and outside, extracurricular education. Secondly, greater emphasis on basic research, which in the old days we didn't have the facilities to do, or the personnel. But now, fortunately, we do have this, so that we can do a lot more basic research. So there has been now a shift, not completely eliminating the consultation and clinical pathological research, but bringing the other factors in as well.

Q: Can you point to some periods where you got more room, more space, more people, more equipment for research? Were there any particular times?

DR. MOSTOFI: Well, the movement to the new building opened up an opportunity for us to do more research, especially with the laboratories and so on. In the old Museum downtown, we didn't have a place for animals; we didn't have laboratories for individual departments. With this building, we have these facilities. Secondly, the Institute has been fortunate in being able to increase its number of people on the staff. When I first came to the Institute, we had only eleven or twelve pathologists, departments chiefs didn't have any assistants and so on, whereas today we have some twenty-nine or so units in the Institute, and each one of them is staffed with at least two, if not three, pathologists. This of course gives you more time to devote some of your time into research and education.

Q: What did you see were the strengths of the Institute regarding research, particularly in your field?

DR. MOSTOFI: Well, the strength of the Institute is that being in the Institute one has an opportunity to see a large number of unusual cases, which would take you years to see in a hospital. So there here at the AFIP, for example, I can say that I have looked at ten thousand testicular tumors; whereas there is nobody else in the world who has had that opportunity. Secondly, we see unusual and rare things.

For example, right now Col. Davis in the Genitouniary Pathology Department is redefining certain tumors of the kidney, which happen to occur in young women. Well, this has never been reported before. And we have found that in fact these are benign tumors, despite their large size, and that none of these patients has died from these tumors, or have had recurrences. That sort of experience is limited to the Institute; you can't do that on the outside, because we can talk about ten, twenty, thirty of such cases, and correlate that with other information that we have.

Q: Well, to get the details on something, let's take these tumors. How did these come to you? What's the modality?

DR. MOSTOFI: The reason why they have come to us is that, first, there were kidney tumors in young patients, then with the women patients. The general feeling on the outside has been that if a tumor was more than, let's say, two and a half, three centimeters in diameter, it was malignant. Well, the local pathologists or the urologists who operated on the patient worried about this: here is a young woman with such a tumor, and the tumor theoretically should be diagnosed as a renal-cell carcinoma. But they wanted to know what we thought about it. Well, we thought that yes, it was a tumor of the kidney, but it was a benign tumor. Because we had follow-up information on a number of these patients, we know that nothing has happened once the kidney has come out. So we were in a position then to clarify the issue, to help the patient. Because if a young women is diagnosed as having cancer, this creates emotional, social and economical problems. But if we can assure the person that we know this is not cancer, this gives a different view, a different situation.

Q: Well now, you mentioned follow up. In one of my earlier interviews, one of the people I talked to was saying that there used to be an excellent staff here who could follow up cases, they had the knack for tracking people down, but that this has gone and there isn't much follow up now. What's your experience on the follow-up situation?

DR. MOSTOFI: Well, this statement is correct. When we first developed a follow-up department, the idea was that on every important case we would get a follow up. Well, that didn't work too well. When we came to this building we did have a follow-up department and they did a lot of work. But with personnel cuts, we do not have an official follow-up department. In my own department all the follow up that we do is done by somebody supported by the Registry. In other words, we pay this person to work, after hours, weekends and she gets us the follow-up information that we want. Other departments have used the central follow-up department, but at the moment that's being organized, so that hopefully we'll have more follow-up after that again.

Q: So, in other words, within your department, you say we really want a follow up on this particular thing, and so you really essentially do it sort of on your own initiative. Do you have the equivalent to a network out there of pathologists who send things in who act as your follow-up assistants?

DR. MOSTOFI: Yes, the system is that we do not accept any material from anybody else except the pathologists. Once a pathologist sends that case in, if we think that we need follow-up information, we write in the letter that we would appreciate any follow-up information and material that may become available. If at a certain point we want to get follow-up information on the patient, then we write back to the pathologist. He may or

may not have the information. If he doesn't have the information, he gives us the clinician's name, and we write to him and ask him. If he doesn't have the information, then we try to get the information directly from the patient. We have forms that we send to the patient and ask them what's happened about it. So that's how we go about it.

Q: When you finish the research, how do you get the knowledge out to the medical community that this type of tumor (and this would pertain, obviously, to other type things) is benign?

DR. MOSTOFI: There are several ways we do that. One of them is that we are oftentimes invited to give lectures and so on to societies, universities and congresses. We talk about this in those settings. But more importantly, we write papers. And after that paper goes through the editorial office of the AFIP, it goes to a journal. We try to put it in first-class journals. Then there is a peer review by the editorial board of that journal, and they say yes, this is fine, this is worth publishing; no, it's no good; or, you better change it. I think it's rare that any paper that we send to any journal is rejected. They may make some suggestions about changes, but, generally speaking, we rarely have a paper that's been rejected by a journal. When that paper is published nationally and internationally and many people read it. For example, we publish in *Cancer*, we publish in various pathology journals, we publish in various specialty journals, like *Journal of Urology* or *Journal of Cardiovascular Diseases,* , the heart journals and so on.

Q: Do you find that the fact that you've published brings in more material?

DR. MOSTOFI: It sure does. It sure does, because people read this and the immediate feeling is: Is this what I'm seeing here? So that increases the consultation service.

Q: But that also gives you a larger bank of information to draw on.

DR. MOSTOFI: Exactly. Exactly.

Q: So that in many ways there is a...

DR. MOSTOFI: Payback.

Q: A payback. The paper brings in more, so that rather than for your prestige, I'm talking about the members here, the real reason to publish is, one, obviously to get the information out, but also to say, look, we're looking at this, bring more stuff in.

DR. MOSTOFI: And also, thirdly, that people ask you to come and talk about it, or people want you to show them, so that we're invited to give lectures and write papers for journals or book chapters.

Q: How do you arrange, in your field, lectures and all on the training?

DR. MOSTOFI: Well, you're talking about education, what do we do about education. Well, we have several things that we do.

One is that almost every department in the Institute has an annual course, which may be two days, three days, a weekend, five days, or six weeks; it varies. That course may be oriented to pathologists, or it may be oriented to clinicans. By which I mean, for example, that we give a course in urological pathology; that course is oriented entirely to urologists. Pathologists can take the course, but we think that maybe it's too elementary for pathologists to take such a course. But nevertheless a number of them come. Well, that's one method of education that we have.

Secondly, as I have mentioned, we get invited to societies, to medical schools, to international conferences and so on, to talk about our work. That's another form of education.

The third form of education is, of course, publication.

The fourth thing is that we have opportunities for people to come and to study.

For example, right now I have two fellows, being sponsored by their own medical school or hospital, who are here for two weeks or three weeks others come for six weeks or a year, depending on the time and so on, to get firsthand information and work with us, to see our thinking about things: how do we decide that this is such and such and not something else? And we have these conferences every day with these people, as part of our own departmental conferences in which we look at cases and sign out cases. In our own department, pathologists come to learn our techinques in the laboratory.

Did I clarify the thing, or have I confused you?

Q: No, no, you're clarifying it, and we're working towards the historian of later on, of how the system works. What about the problem of having somebody who has an international renown in your field as you do? How do you nurture younger pathologists who are working under you? Because I'm sure everybody who sends things in says, "Well, I want the top man, I want the imprint of Dr. Mostofi on the thing." This must be a problem, isn't it?

DR. MOSTOFI: No. No, actually what happens, every case that is sent in, even if addressed to me personally is given to one of our assistant pathologists, she or he looks at it, and then checks it with me, or if I am not available with either Colonel Davis or Dr. Sesterhenn, who are the senior pathologists, and if there is any question, all three of us look at it. If something is addressed to me personally or the contributor specifically asks for my opinion, I examine it and report it.

For example, this morning I had a case in which there was disagreement between me and the contributor: he called it something, and I didn't think that was it. Okay, what do we do with that sort of thing? We invariably show it to the other senior members.

The whole idea is to train people to take over from you when the time comes, or to train them so that when they go out, they can be of help.

For example, we have a number of people who have worked in our department who have gone out. One of them, for example, Dr. Levin, at the Cleveland Clinic, is in charge of all the urological pathology material. We have Dr. William C. Allsbrook who was with us for three years who is at the medical college in Augusta. He is right now being recognized as a distinguished urological pathologist, because, on the basis of what he learned from us, he can apply that technique to where he is, and write on prostate, on bladder, or testicle. So that's the way it goes. We have, and still do get, people from overseas and train them for important academic positions.

The objective is to train these people to take over from you if something happens to you, or if you die, or pass on.

We have a good example of this with Dr. Sharon Weiss. Dr. Enzinger trained her to the point where she took over from him when he retired. She was in the department for a year or two, or something like that, and then she went out, and she is at the University of Michigan, in Ann Arbor, Michigan, where she is not only in charge of soft tissue, but in fact in charge of surgical pathology, the whole program.

Q: I've interviewed Dr. Weiss, not on television, but on tape. But as I'm going through this program, I haven't run across many women. Are things changing, or is there a particular reason why women don't move into this particular field, or is this just happenstance?

DR. MOSTOFI: Well, both. For example, in my own department I have four ladies working for me. Dr. Antonovych and Dr. Sabnis, who are in medical nephropathology. Now Dr. Antonovych has been with me for at least twenty-three years or so; she came in 1967. Dr. Sesterhenn has been with me for sixteen years. Dr. Sabnis has been with us for about fourteen years or so. These pathologists are nationally and internationally recognized. They get invitations from overseas for lectures and manuscripts. We have had several military pathologists with us. Then we have a military physician, Col. Parekh, who has been with us now for three years.

By and large, if a lady applies, she is treated exactly the same way as anybody else. But there aren't as many women going into pathology, perhaps, as there are men. But this is changing, so more women are going into pathology. So there is no prejudice against a woman applicant. In fact we have a number of female pathologists who are department chiefs.

Q: Are you finding more women in the military, aside from other military hospitals, in the pathology field?

DR. MOSTOFI: I think we have a fair number of women in military pathology, but I can't tell you how many because I don't really know.

Q: You cover a very important span of the history of the Institute. As times have changed, have there been major changes in the technology?

DR. MOSTOFI: Yes, indeed. Electron microscopy was brought in primarily for kidney biopsies. Up until the mid-seventies or late-seventies, our approach to the study of a case was based on what we called hematoxylin and eosin stains. And in the late seventies, immunopathology came into the field. And at the moment, almost any case which there is any question about the diagnosis, we do various immunopathology stains. Now more recently, in the last two or three years, my department has gone into trying to demonstrate chromosomes in interface nuclei.

Let me explain this. To do chromosome studies in the past, what has been done is that fresh tissue has been cultured to get mitotic activity. And it's on those mitotic cells that chromosome studies have been done. We have developed and we have demonstrated that in fact you can show these numerical changes in chromosomes in formalur-fixed paraffin imbedded tissue. Not cells, not cultures, but in tissue slides. Now the advantage of this is that if you look at the chromosome stains, and, let's say, chromosome 10 is abnormal in this cell, you can relate that cell to what you are seeing in a H&E section; you know where that cell is located, whether it's in the bottom of the section, whether it's mitotic or non-mitotic stage, and so on.

So we are developing more and more of these techniques, and applying them to everyday diagnosis and to research.

Q: Well, this implies that the techniques require a different type of equipment or approach, chemicals or stain or this type of thing.

DR. MOSTOFI: Exactly. Also a different mentality. You have to be interested in developing these things, in exploring these things. And the Institute has been very fortunate, in that most of the department chiefs are interested in this sort of thing. In fact, all of them are interested. Because, now, if you just make a diagnosis on a H&E stain, somebody else out there may be doing something more, and you're left behind if you don't do this thing now.

For example, as far as chromosomes are concerned, we are the only department in the United States, and one of two or three departments in the whole world, which is doing what we are doing. Now, a fair number of people are doing it on cell suspensions, where they have fixed tissue, they shake it up and break it up into cells and nuclei, and study those. But then you can't relate that to what you see in the H&E section because you don't know which cell it is that is abnormal. Whereas what we are doing, we can relate it. And hopefully in time we can recognize these abnormal cells in H&E sections and we won't have to do this. But until that time, every department of pathology in the world can apply this technique; whereas they can't do karyotyping, which is tissue culture to get mitotic phase cells.

Q: Do you find that you're looking at other institutes, I'm thinking of Sloane-Kettering or some other ones that are doing somewhat equivalent research, and are you making sure that you are keeping apace with any other developments that must be cropping up in

other places?

DR. MOSTOFI: You have to, because there is a lot of this work going on on the outside, and they can get support from the Cancer Institute, they can get support locally, they can get support from the American Cancer Society, they can get support from insurance companies, drug companies, and so on. So there is a lot of work going on. And the feeling at the Institute is that we have to be in the forefront, so we have to know what everybody else is doing so that we're not left behind.

Q: Mentioning private organizations giving support and all, there was a certain problem in the mid-1970s, you had, first, UREP...what does that stand for?

DR. MOSTOFI: Universities Associated in Research and Education in Pathology. Well, let me give you the background of that. When the registries started, the Army Medical Museum and the Army Institute of Pathology were working with the National Research Council, so that if one of the societies or any group wanted the Institute to do some special work, and gave the money, that money would go to the Treasury of the United States and we would not see it. Whereas with this system that we had with the National Research Council, the money would go to them, and they would hire people or buy things for us if we needed, which the military could not get. In the mid-seventies, the National Research Council decided not to get involved in the daily operations at the Institute. So we had to find a group that would take over from the National Research Council in being the sponsors. At that time, General Blumberg and Dr. Stowell got the idea of a group called Universities Associated in Research and Education in Pathology.

Q: Blumberg was the '63 to '67 period.

DR. MOSTOFI: That's right, he was the director. So Universities Associated in Research and Education was established. All the money that the Institute had or the registries had in the National Research Council was transferred to this group. This group went along for a number of years, and then when General Dick Taylor became surgeon general, he was concerned as to what was going on: Were these people abusing the registry, or were they really helping the registry? And many other questions. Well, so at that time, Senator Kennedy became interested in the Institute, and Congress then recognized the American Registry of Pathology as a nonprofit organization, the purpose of which was to develop the relationship between the AFIP and the civilian community. So at the present, the American Registry of Pathology is a legally, congressionally recognized, nonprofit organization.

Q: By Act of Congress in 1976.

DR. MOSTOFI: In 1976, that's right.

Q: But at the time, from what I gather, there was a lot of unhappiness on this. The director, Colonel Hansen, left unhappily over this and all. What were the problems that caused this?

DR. MOSTOFI: Well, one of the problems was that UREP seemed to abuse. For example, one of the things that came out was that UREP would invite the members to come to a meeting at the Federation office over here in Bethesda, for three days, let's say. During those three days, they talked about the Registry for two hours, but the expenses, the honoraria and so on for three days, were paid out of the Registry. Now that sort of thing got not only the staff, but people outside, concerned about it.

Secondly, the people that were hired through UREP were doing all sorts of things which had become illegal. Namely, a nongovernment individual cannot supervise, cannot order, a government employee; whereas with that setup, it was all mixed up.

So, because of the legal implication, and because of the unhappiness with UREP, Senator Kennedy got involved and was instrumental in recognizing the Registry and authorizing it by Act of Congress to operate in this relationship.

Q: Well, Senator Kennedy became involved how?

DR. MOSTOFI: Well, very easy. What happened is that we had a gentleman, Dr. Silverstein, who was in the Army for two years and he was assigned to the Institute. He went from us to Johns Hopkins, and he was professor at Hopkins. Well, on a sabbatical, he went for a year to work in Congress, and somehow or other he got involved with one of Senator Kennedy's committees. So when he learned that we were having this trouble, that we were about to lose this whole relationship of the Registry and civilians and AFIP, he was able to convince Senator Kennedy. And I think it was Senator Kennedy and Senator Nunn, who put in an amendment to one of the Defense Department bills, authorizing this operation.

Q: Well, did you all feel this at the time? Sort of were the ranks riven by discussion of whether we ought to have this or that?

DR. MOSTOFI: No. No, we all wanted to keep the Registry. Some of us were not happy with UREP, but when this was done by congressional act, we were in seventh heaven.

Q: Well, this points out one of the major problems of anything in the government, in that there was no modality for accepting money for a distinct purpose, even though that wasn't a form of bribery, it was just to help, and that you had to have outside organizations do this type of business.

DR. MOSTOFI: Well, I think I mentioned in my first interview with you the way the thing started. Because some societies were interested in doing something more than just

treating the patients, they wanted to know what happens if you treat the patients such and such a way, or when they have removed a specimen surgically, what did it show? For example, I think I mentioned the fact that the eye people became very much interested because they were doing a enucleation of the eye, and local pathologists didn't know how to handle it. So, at the time, they went to the National Research Council, saying that they wanted to have a laboratory somewhere to handle these eyes. Well, at the same time, Dr. George Callender, who later became General Callender, was the curator of the Medical Museum.

Q: This was from 1920 to '22 and 1924 to 1929.

DR. MOSTOFI: That's right, exactly. Well, in the period of '22, thereabouts, he had gone to the National Research Council, the Medical Division, telling them that he was unhappy that this was all a military organization, military support and so on, and that he wanted to get civilian pathology material in here. Well, so the head of the medical department, Dr. Winternitz, brought the two together. So the American Academy of Ophthalmology and Otolaryngology gave the National Research Council three hundred or four hundred dollars a year for Dr. Callender to hire a technician to do this work in the Medical Museum. And that started the registries, you see.

Now everybody profited by this. Callender profited because he got what he wanted, namely, to have an opportunity to see more than what the military was providing. The civilian societies got benefit out of this. And the National Research Council got benefits because they were helping to bring the best pathology to the patient.

Q: Well now, with the American Registry, and actually beforehand, did you find, as a department head, that from time to time you were going out and doing what professors have to do at universities, and that is, promote fundraising from private sources and all that? Obviously, it would be channeled through, and it would come to you, though, as the research. Did you find this was part of your job?

DR. MOSTOFI: No, I think that we were encouraged to try and seek outside funds, because the military budget is limited. And so every department chief tried to get some money from somewhere. This money may come from a commercial firm, from a drug company, it may come from the National Cancer Institute or National Institutes of Health, it may come from the American Cancer Society or the Heart Association and so on.

Q: Well, I'd like you to disclose, maybe, your techniques, if they're not secret, right here on TV. Could you give me either a hypothetical or actual case: you have a problem, you need money, how do you go about doing this?

DR. MOSTOFI: Well, you go to meetings and you read in the journals and so on that there is interest in a certain area. Knowing that, and knowing who may be interested in developing research in here, you go to those people and talk with them about it. If there

is any encouragement, then you fill out an application. The application may be a thousand pages, or it may be a couple of hundred or few pages. That application is sent in. Well, let's just say that you want to apply for a grant from the National Cancer Institute or the National Institutes of Health, you have to fill out the forms and so on, you have to clear it with everybody here, then the Director has to approve it and so on. And the Registry is involved in it, because the money is going to go through the Registry, and its overhead of...I don't know exactly how much, which is settled between them and the granting agency. Then a certain amount of money is given to the Registry to support your research.

By and large, we use that money to hire technicians, because we need technical help. We use some of that money to buy supplies which the Army can't get for us or it takes too long to get. So this gives us a whole lot more opportunity to do research than if we didn't have it.

Q: Well, do you find, though, that in a way this works, but in a way there's a problem, because when the budgeteer people (who are a breed apart from anybody else) start looking at this, they say, "Well, you know, these guys can raise the money themselves, so let's not do this or that"?

DR. MOSTOFI: The money is for research, not consultation or education. They try to encourage it, but I don't know that at any time the Institute has said that since you didn't get this grant, we're not going to support your research. As far as I know, this hasn't happened. Because the directorate understands that when you apply for a research grant, you are competing with a lot of people. And, secondly, there may be a sentiment on the outside that hell, they've got all that money from the Defense Department, why should we pour any money into the Institute? So I think, fortunately, the Director is aware of this. So that if you put in three months to get that application prepared and it gets turned down, you're discouraged, but you don't give up.

Q: And the preparation of applications takes an inordinate amount of time.

DR. MOSTOFI: It takes an awful lot of time, especially for organizations like the National Institutes of Health and the Cancer Institute and so on. We work more with the Cancer Institute. perhaps, than the Heart Institute and Eye. But my own experience has been with the Cancer Institute. For a number of years I represented the Assistant Secretary of Defense for Health Affairs on the National Cancer Advisory Board. And when I was on that board, I made a point of looking at the ones that had been turned down, to see why were they turned down and if anything could be done about it.

But before it gets to that point, the application goes to a study section. That study section can be a permanent study section or it can be an ad hoc study section. For example, some of us have been involved in ad hoc study sections on the recent interest in cancer of the prostate, where we have acted, on the study section, and we have made recommendations as to whether this should be approved or should be disapproved, what

level of support, and what standing, what priority.

So every time that you put in an application, that application goes to some study section. That may be a government study section or it may be a private organization's study section. And they decide whether it has merit or it doesn't have merit. And on that basis, it's approved or disapproved.

Q: Do you find that you can have a joint project with another institution or university?

DR. MOSTOFI: Oh, yes, we do that very often. For example, we have a project with the American Cancer Society, where they support the work that we're doing. This is encouraged by the directorate, that as often as we can we should get involved with universities, with medical schools, with organizations.

Q: There are, in a way, two organizations. One is the regular AFIP organization, with a director, assistant directors, deputy directors, and department chiefs--the regular military hierarchy. But then you have your American Registry of Pathology, which has its own directorate which is essentially civilian, with, I think, two members out of twelve, or something like that, from the AFIP. Now do you find that you are working for two masters, in a way, or not?

DR. MOSTOFI: No, fortunately, that hasn't been a problem, at least in our own department. Because whatever we want to get from the Registry, we usually clear with the Institute. In other words, I've used some of the money in the Registry for travel. Before we do that, we ask the Institute if they have the money. If the Institute says we don't have the money but this is a good meeting to go, then we go through the Registry, and that's all there is to it. For example, I have a technician in my department, supported by the Registry. Now that money that the Registry has is some money that the department has earned. The money doesn't belong to me, it belongs to the Registry, but I am privileged to use it. No, I haven't felt any working for two masters.

Q: What about some of the directors of the Institute; in particular, were you here at the time when Colonel Ash and then General Dart took over?

DR. MOSTOFI: Well, Colonel Ash invited me to join the staff. By the time I joined the staff, General Dart had become the director, and he couldn't have been more supportive. For example, I had been here for two weeks the first time he called me in, and he said, "I've got a good secretary for you." And she was terrific. And I wanted, for example, a laboratory, and I was told that when we get to the new building, you'll have a laboratory. And we were given a laboratory.

Q: Did you feel...I picked this up from someone else I interviewed, about when Ash and Dart...one gets the impression of two very effective, but two very aggressive, men, and at one point Ash had left but was working here as...

DR. MOSTOFI: Scientific Director of the Registry.

Q: Director of the Registry. And Dart was here, and it was a difficult time, let's say. As the new boy on the block, did you feel that this was a little bit difficult?

DR. MOSTOFI: Well, we felt that, at least I did, felt with Colonel Ash. Because when he was the Curator of the Museum, and when he was the scientific director of the Medical Registry of Pathology, there was no accounting of the monies. Now I'm one hundred percent certain that Colonel Ash did not abuse this, but, still, if somebody walked in and said, "What are you doing with this money?" you couldn't account for it.

Q: Sounds sort of like a one-man show; I've always run it this way, I know what I'm doing, don't bother me type of thing.

DR. MOSTOFI: That's right, exactly. Well, General Dart was a systematic individual. He wasn't against the Registry, but as long as they were dealing with money, he wanted the Registry to be run in a manner that, if an auditor came in, there would be no criticism. Well, Ash didn't like that, because that, in a way, controlled Ash's operations. And so there was friction there. And there was some feeling, actually, because Ash was the curator of the Museum, and Dart came to replace him. This was the early part of the war. And then Ash managed to get back to the Institute and have Dart be sent out. And there was that sort of feeling.

Q: I noticed that, for example, Ash was the curator of the Museum from 1929 to '31, and then he came back from '37 to '46. Dart was from '35 to '36, and then from '46 to '50.

DR. MOSTOFI: Ash managed to get Dart out of here.

Q: Well, as it was described to me, these were two rather short, very feisty men, and they...

DR. MOSTOFI: They were two different people. Two different people, and they both had good points. As far as I know, Dart didn't have any bad points at all. Dart and Callender were the two people that got the building, but Dart really worked very hard to get this building materialized.

Q: How did you feel about the move? Did this sort of change your horizons when you came here--more space and...?

DR. MOSTOFI: Oh, God, yes. It was like going to heaven. From my own point of view, it was very close to my house, only three and a half miles. But from the professional point of view, this was wonderful, because, as I mentioned, for example, I

could have a laboratory. We had the facilities to do animal research, which we didn't have in the old building. And the proximity to Walter Reed made us think that maybe we would be working more closely with Walter Reed, with the departments there and with the Pathology Department and so on. So it opened up a whole new avenue.

Q: In looking at some of the others here, I wonder if you...just because, again, we're going for the history, to put a little flesh on just the names. General Albert DeCoursey came and served from 1950 to '55. How did you find his method of operation?

DR. MOSTOFI: I found it very exciting. He was a wonderful person. What he used to do, and the same was done by General Dart, and some other directors have done it, and that is that he told the administration that they were here simply to help us. And that creates a wholly different atmosphere. Because the executive officer, the personnel and so on and so forth, they all know that their very existence is how much they served the professional staff.

Now when we have had Army directors, by and large the Institute has been able to progress, simply because they knew the people in the surgeon general's office and there was a personal relationship there.

Q: They could get more support from them.

DR. MOSTOFI: They could get much more support, they could talk on a first-name basis with the people, and so on. Well, when we had Navy or Air Force, even though they tried to do everything that they could, they were handicapped because, in essence, they didn't have any direct communication with the surgeon general of the Army. I think this situation started changing with Dr. Cowan, and more so with Dr. McMeekin.

Q: Dr. Cowan, a colonel in the Air Force, was director from 1980 to '84.

DR. MOSTOFI: At that time, the Army deputy director was a very strong character, and he had a good relationship with the surgeon general's office. After that, when Colonel McMeekin became director...

Q: This was '84 to '87.

DR. MOSTOFI: Yes. Then the director was invited to go to the surgeon general's office every Friday morning to the staff conference. And this really helped a great deal because of the fact that if any problems came up between the AFIP and the surgeon general's office, between the budget people, the personnel people, and so on, the director was in a position to influence this, at that level.

Q: I see. So, really, something that gets overlooked sometimes in looking at the AFIP is the role of the surgeon general. He's Army, and, as in any organization, when decisions,

particularly budgetary, administrative type decisions, are made, you really have to have somebody who is inside the decision-making circle. And so this is one of the problems of having people who come from essentially outside the Army hierarchy, isn't it?

DR. MOSTOFI: Well, we have another thing that has happened--we have a board of governors. The assistant secretary of defense for health affairs is the chairman of the governing body. And, fortunately, every one of these, especially the present one, has been very much interested in the AFIP. They like to help us if they can.

Until recently, budget was not at that level. The Army budget went to the Army; the Army allotted a certain amount of money to the surgeon general for medical operations and so on. The same applied in the Navy and Air Force.

Now, Dr. Mendez, who is the assistant secretary of defense for health affairs, has more control on the budget. Now he is the type of person who doesn't want to interfere, but he can if he wants to... Fortunately, we haven't had to go to him and say the Army isn't giving us enough money, because the Army has given us essentially what we have asked for. Because, fortunately, the surgeon general, and the deputy surgeon general and so on, have realized that the AFIP is a valuable asset. They have supported the Institute.

Even going back to General Taylor, when he wanted to eliminate the Registry, he gave the Institute a number of civilian slots to replace the Registry people.

Q: This was back in...

DR. MOSTOFI: Back in the seventies.

Q: Well now, let's walk through. There was a Naval captain, Silliphant?

DR. MOSTOFI: Yes. He was a wonderful director. And Silliphant had Colonel Blumberg as his deputy.

Q: Joe M. Blumberg.

DR. MOSTOFI: Joe M. Blumberg was a fiery...he was a terrific individual.

Q: He's one of these people who stands out in these interviews.

DR. MOSTOFI: He stood out. And Captain Silliphant had a lot of problems, you see, because he was in the Navy, and by this time we had now moved to the AFIP.

Q: And he was the first Naval director.

DR. MOSTOFI: He had had a very sad experience, in that he was a prisoner of war in the Philippines for several years during the war, right from the beginning to the time the United States conquered the Philippines. And some of us thought that he ought to get his

star. But there was objection to this from two points. The Navy said they would give us an admiral, who had only had six months pathology, and we didn't want that. And then the commanding general of Walter Reed didn't think that he should have a Navy admiral here. But it was mostly the Navy rather than anybody else, you see.

Q: Well, the Navy doesn't like to give out admirals' stars to somebody who is outside their particular bailiwick.

DR. MOSTOFI: And then the same thing happened with the Air Force.

Q: Colonel Frank Townsend, who was director from '59 to '63.

DR. MOSTOFI: That's right. He was a very good director, and he had good relations with his surgeon general's office, and also with the Army surgeon general. And so we didn't suffer. But all this time, Blumberg was the Army representative, and he could get you almost anything that you wanted.

Q: He later became a major general.

DR. MOSTOFI: That's right, he got two stars.

Q: And he served as director from '63 to '67.

DR. MOSTOFI: That's right.

Q: Can you give me an idea of how he operated?

DR. MOSTOFI: Well, I think he was a good director. He tried to support the professional staff, he did not micro-manage. He let you know he was proud of you, although he was rough at times. But I think when he left the Institute he was still very highly admired and respected, and the professional staff didn't feel that we had lost anything under him.

Q: Well, I'm taking it, though, there was a conflict, the fact that you didn't lose anything under him.

DR. MOSTOFI: No, the conflict arose because the AFIP brought in a scientific director who had been dean of a medical school and didn't know anything at all about the operation of the military, about what you do and so on. And, unfortunately, there was essentially a conflict between the scientific director and the chairman of what has become the Center for Advanced Pathology, Dr. Helwig. Dr. Helwig had all the staff and support; Dr. Goodpasture didn't have anything, yet he was supposed to direct research at the AFIP. And it just didn't work.

Q: What is the scientific director? When did this come in?

DR. MOSTOFI: When we moved to this building, one of the ideas was to get a scientific director who would essentially direct the scientific activities of the Institute, the professional activities. Well, this has never worked this way, and so eventually the scientific-director position was eliminated.

Q: So this was sort of an administrative experiment that didn't pan out.

DR. MOSTOFI: That's right, it did not pan out. Exactly. Well, I'm sorry to say, at the time, I thought that the Institute was abusing Dr. Goodpasture, because Goodpasture could do a lot to help with the research. For example, when he came, he had to write a job description for his secretary. Well, you don't ask the dean of a medical school to sit down and write a job description for his secretary.

Q: What was Goodpasture's background? You mentioned he was dean of a medical school.

DR. MOSTOFI: Dr. Goodpasture was an internationally recognized pathologist. He was chairman of a panel of pathologists that was sent to Poland to study the typhus epidemic. And then he was back and was dean of the medical school and so on, and when he retired, he came here as scientific director. But his primary thing had been not administration, but, rather, professional scientific work. Although he was dean of the medical school, I don't know how much running of the medical school he did. So that was his background.

Q: Well, how did you work with him?

DR. MOSTOFI: Worked very well, because I had known him personally, and I had no hesitation to walk in and talk to him about things. But I couldn't discuss my staffing, I couldn't discuss what I was doing and so on, with him. I could discuss research that I was trying to do.

Q: But research always means staffing, doesn't it?

DR. MOSTOFI: Research means staffing, but he didn't have any control on that. But if you put in an application for a grant outside, he would be able to be very helpful in suggesting changes and so on.

Q: When did the scientific-director position get eliminated?

DR. MOSTOFI: Well, we had Dr. Goodpasture, then we had Dr. Stowell, then we had

Dr. Angevine, but he really didn't do anything. I think it was eliminated somewhere in there between Morrissey and Hansen. I think more under Hansen than Morrissey.

Q: Well, moving on. I'm walking you through some of the directors, but I think this brings up things. There was a Captain Bruce Smith, who was the director from 1967 to '71, from the Navy. There's not much; he was just a director.

DR. MOSTOFI: He was a director. Well, he did a few things that we didn't like.

Q: Such as?

DR. MOSTOFI: Well, he broke up some of the departments. I think he was instrumental in developing the Educational Office. Well, all education was under Dr. Helwig, but Dr. Smith decided that we had to have an Education Department.

Q: Doctor, on this, with this Education Department, did you feel that was sort of taking things away from each of the bureaus and sort of creating sort of an unnecessary...?

DR. MOSTOFI: No, essentially taking it away from the Department of Pathology, which covered the whole thing. And we thought that this was putting extra people to do what had been done in the Department of Pathology and in Dr. Helwig's office.

Q: Sort of an extra layering.

DR. MOSTOFI: Extra layer in there. As it has developed, perhaps it was a good thing to have such a unit because of the fact that we're involved in education a lot more today than we were at that time.

Q: But it's something that has continued since that time?

DR. MOSTOFI: Yes. Yes, and it has expanded.

Q: But what is it, everybody's learned to live with it?

DR. MOSTOFI: Yes, we try to live with it, and we try to take advantage of it.

Q: Well, you talk about giving lectures and all, how does one...I use the term of the era we're in, how did your department "interface" with the Education Department in your particular field?

DR. MOSTOFI: In my own particular field, when we give a course, we hope that the Education Department will get the things done for it. For example, we have to prepare a handout, well, the Education Office takes that and duplicates it. We have to have people

at the registration desk when the course starts, the Education Office provides that help. We have to organize the whole meeting, and the Education Office is supposed to do that, and it does.

Q: Well, then it really performs an administrative function.

DR. MOSTOFI: That's right.

Q: Rather than says "Thou shalt not teach this," or that type of thing.

DR. MOSTOFI: No, no, no. No, no, no. No, that's all our function. In other words, I decide what lectures I'm going to give, what subjects I'm going to cover and so on, and who's going to help me.

Q: Well, that really takes quite an administrative burden off you.

DR. MOSTOFI: Oh, yes, it really does. Yes, definitely.

Q: Well, then we move to the next one, Colonel Morrissey, who was only here two years and who left sort of slamming the door behind him, I take it.

DR. MOSTOFI: He did.

Q: I've seen a report in which he...

DR. MOSTOFI: He wrote an after-action report.

Q: Yes, end-of-tour report, and he...

DR. MOSTOFI: He blasted the civilians.

Q: Well, basically he blasted the civilians, and he said each branch chief tends to march to his own drum. Well, you were a branch chief, weren't you?

DR. MOSTOFI: Well, you have to do it to your own drum, because how can somebody on the outside say don't do this, do that? In fact, I think he was the only director who felt that way, but, you see, he didn't have any background. Before that, the directors had been here for two, three, or four years.

Q: Usually as deputy director, hadn't they? They had worked their way in.

DR. MOSTOFI: That's right. The whole idea of doing that, which was General Dart's idea, was that when they became director, they didn't want to radically change things.

Now that has advantages and disadvantages. The advantages are that the tendency is to stabilize things. The disadvantage is that sometimes no new ideas come in.

Unfortunately, Morrissey came in here under a cloud. Smith had a very fine Air Force deputy director that we all admired and thought highly of. His name was Leeper. Well, Smith didn't like Leeper. And it started at the inaugural services, where Leeper was chairing the program there, and his little daughter was sitting in the front row, and she came up to be with her father. And it didn't upset Leeper, but it upset Dr. Smith, because her picture got in the newspapers and so on.

Q: First.

DR. MOSTOFI: Well, the way that Leeper had handled the situation. And so Smith finally, one day, called the surgeon general of the Air Force and said he wanted Leeper out. We were all for Leeper; if somebody at that time had taken a vote as to who would you prefer to be director, I think most of us would have said Leeper. But Smith got him out and Morrissey came on.

And Morrissey wasn't very sympathetic with the AFIP or with the staff. And so he wrote this after-action report, or end-of-duty report, which blasted what the AFIP was doing.

Q: One of the things he said that struck a note with me, having worked in an organization, the State Department, for many years, and sounded like it had a certain validity, was that in each department the people had been in it for a long time and knew what they were doing, but, again, as I mentioned, marched to their own drum, particularly in their response. Consultation has always been sort of the lifeblood of the Institute--you get specimens in, this is how you gain your name, this is how you develop your bank of materials and all that. But that some departments answered their mail promptly; others did it at a completely different rate. And one of his complaints was that he couldn't get control over the response time. How did this work?

DR. MOSTOFI: Well, I honestly don't remember any time that Morrissey called me in and said you're not getting cases out on time; get them out.

Q: Maybe you were doing it. Because he said some were responding easily.

DR. MOSTOFI: Well, I don't really think that he did that to anybody. Now one of the things that Morrissey used to do is go around the laboratories and pull out the desk drawers and look at what the girls had in the drawers. I mean, it was micromanagement, you see. And that created some resentment, because girls liked to have their drawers left alone. You don't know what they have there. But he was the Director. If any of the professional staff didn't do their consultation work on time, he could have told them to do it. In fact there were only two that were slow.

Q: Well, was his style then not so much sort of sitting down and talking to you?

DR. MOSTOFI: Oh, no, he never did.

Q: Just to find out what the problems were and trying to sort it out at that level?

DR. MOSTOFI: No.

Q: Now did other directors do that?

DR. MOSTOFI: Yes and no. Sometimes they do; sometimes they don't. Now Dr. Hansen, Colonel Hansen, who took over from him...

Q: This is James L. Hansen, an Army colonel.

DR. MOSTOFI: He had been at the AFIP before, in various positions. But he reminded me of Anthony Eden, in that when he became director, he really didn't know how to operate.

Q: We're talking about Anthony Eden, who was for many years the foreign minister and deputy to Winston Churchill, in Great Britain, and then when he became prime minister, it all went to pot, including the Suez problem.

DR. MOSTOFI: Well, the same was with Hansen. Hansen did an unfortunate thing. Dick Taylor had been junior to Hansen.

Q: Dick Taylor was the surgeon general.

DR. MOSTOFI: At that time, he was surgeon general, and there was a feeling between the two of them. And the worst thing that could have happened was that, after Morrissey, we had an IG, inspector general, come to the AFIP and make certain recommendations. Well, at one of the first meetings that Taylor had with Hansen, Taylor asked him what was he doing about the IG report. "Oh," Hansen said, "Dick, we have had these things in the past, we don't worry about them." Well, that was the wrong answer. He should have said, "By God, we're going to change everything." Whether he was going to change everything or not was irrelevant.

I had known Dick Taylor since he was a major, and we had very good relations; My wife and I would go to his house, they would come to our house and so on. And this relationship did not change when he became surgeon general. So he'd complain to me about Jim Hansen, I'd come and tell Hansen, "For God's sake, do so and so, because Dick Taylor is concerned about this," and nothing would happen. Or, when he started doing things, he went to the other extreme. For example, for generations, I guess, we had the

International Academy of Pathology headquarters at the AFIP. And nobody thought anything about it. Jim Hansen got worried and had it kicked out of here. Well, the editorial office of the fascicles had been here for many, many years. It worked very closely with the staff, it worked very closely with the print shop and so on. And Jim Hansen thought he ought to get it out of here. And so he did a number of things he really didn't need to do, but compensating for, at this time, trying to please Dick Taylor--which was a lost cause. So we all felt sorry for Jim Hansen; he was trying to do the best that he could.

Q: And he also came at the time when the UREP thing sort of came to a head.

DR. MOSTOFI: It was a bad time. That's right.

Q: Something which had been, I suppose, essentially frustrating for a long time.

DR. MOSTOFI: Brewing for years, that's right. Exactly.

Q: But it was the IG and all that that prompted this.

DR. MOSTOFI: Exactly. So, anyway, we all liked Hansen, or at least those of us who knew him felt sorry for him, because he was at a loss being director.

Q: I just interviewed Captain Elgin Cowart, who followed from '76 to '80, and I had the impression from him that he was brought in to keep calm and get things back on course.

DR. MOSTOFI: That's right. He did. He didn't interfere with anybody or with anything. He let Dr. Helwig run the pathology. The criticism that people had of him was that he never left his office. Now if a director went around and bothered you too much, you wanted to have him to stop; and if he didn't do anything you were unhappy. And there's a happy medium, and I don't really know what the happy medium is.

Q: How do you get around...

DR. MOSTOFI: Correlating these two things, you see.

Q: Well then, he was followed by an Air Force colonel, William Cowan, from 1980 to '84.

DR. MOSTOFI: Well, Colonel Cowan had two deputy directors. One was Dr. Zuck, Colonel Zuck, the Army deputy director, and the other one was Dr. Karnei, who was the Navy deputy director. And, I don't know, Cowan really didn't do much of anything, except that he did not support the professional staff or CAP organization against Dr. Zuck who attempted to take over. But, you see, organizationally, the senior deputy director is

supposed to be in charge of CAP.

Q: Well, CAP is...?

DR. MOSTOFI: Center for Advanced Pathology. But in fact they didn't do much controlling, much supervising. For example, when I was chairman of CAP under Cowart (he appointed me), and he and I would have a discussion about something, I would invariably go down to Cowan and tell him what had happened, because at that time he was the senior deputy. I went to him to tell him what had happened and how and so on. But when Zuck took over, Zuck in fact wanted to replace the chairman of CAP, make himself to have total control. Well, as chairman of CAP I had a lot of responsibilities but no authority, because all authority was with Zuck, he assumed that. And Cowan didn't do anything to clarify that. And then, when Zuck left and we got somebody else as deputy director, it was Dr. McMeekin. But Dr. Karnei became Senior Deputy Director and tried to run CAP.

Q: Dr. McMeekin later became director from '84 to '87, a colonel in the Army.

DR. MOSTOFI: That's right. Initially he became a deputy director, and then Dr. Karnei took over as Deputy Director in charge of CAP. So again I had trouble with me having responsibility and no authority; the authority all being there, and me being held responsible for things that didn't happen. I had resigned when Dr. Cowan took over, but he wanted me to stay, so when he left and Dr. McMeekin took over, I resigned as chairman of CAP, but he wanted me to stay for a couple of years, and then I finally was able to get out, at which time then Dr. Karnei took over.

That created another unhappy situation, in that the professional staff really didn't have anybody to defend them or to support them or to get the director to change his mind about something or other.

Q: When you talk about the professional staff, you're really talking about civilian doctors.

DR. MOSTOFI: Well, no, civilian and military.

Q: The civilian and military, with a new director coming in all the time, although many of them had been nurtured through the system. There's a military way and a civilian way, and how did these...?

DR. MOSTOFI: Well, it varied with the director. Some directors took pride that they had outstanding people working in the Institute. Some directors tended to be jealous. And so this affected the relationship, because we didn't feel like walking in and discussing things with the director. And also, I would say, since Blumberg left...

Q: In 1967.

DR. MOSTOFI: ...the professional staff had the feeling that they were going down, that administration thought that the staff was here to support them rather than vice versa. Now some of that may have been justified, some of that may not have been justified, but that gradually became the feeling.

Now, fortunately, we have a director at the present who has been through the mill, he was on the staff at all levels.

Q: This is Dr....?

DR. MOSTOFI: Col. Armbrustmacher. He was chairman of a department, so he knew the problems that the professional staff had. He had been here as a civilian, and as a military, first in the Army, then in the Air Force. And so the relationship with him is a whole lot better than it was, let's say, with McMeekin or with Karnei, because there is a trust. Now there is still unhappiness by some people, saying that, well, decisions are made up there and permeated down. But I don't think Armbrustmacher has done that. Karnei used to tend to do that.

Q: I interviewed Dr. Karnei yesterday, and he said, "Be sure to ask Dr. Mostofi," he said, "we've always been good friends, but at the same time I'm sure he has comments to make about my method of management." And so...?

DR. MOSTOFI: Well, I personally like him very much. But from the time that he was...well, let me go back. When I came to the Institute in 1948, I wanted a laboratory, a laboratory not to do what the main lab did, but a laboratory to do what I wanted them to do in research. And as soon as we moved to this building, we got a laboratory. Now the ophthalmologists had a laboratory, but that did ophthalmology work, it did all the processing of cases. The Veterinary Pathology Department had one, but they worked with animals. The Orthopedic Pathology Department had a lab, but they did orthopedic pathology. We didn't do that. We let the main lab do the work, and we did whatever we thought we needed to do for research. And initially this was almost all oriented to experimental work.

For example, I was interested in acute renal failure, which is a military problem. And so we worked with animals; at first we worked with rats, and then we went into monkeys. And through the years, for example, my laboratory was the first laboratory to introduce immunopathology to the Institute. Now, at the present, we're involved in chromosome work, which I have already mentioned.

For some reason or other, Dr. Karnei, from the beginning, felt that this lab should be eliminated. And I was certain that when he took over, that he would eliminate the laboratory. Now he knew, and this wasn't a matter of threatening anybody or anything, but the directors had known that without a lab, we can't operate. I feel that a pathology

department that doesn't have a laboratory where it can do some of the things that should be done in that department, which cannot be done elsewhere in the Institute, should have an opportunity to do it. Fortunately, Dr. Armbrustmacher and Dr. Hartnan talked Dr. Karnei out of eliminating my lab. But he didn't support it.

But he and I got along. Especially after I gave up being chairman of CAP, we got along fine.

But he had a peculiar way of doing things. Now we wanted to establish a flow cytometry laboratory in the Institute. This is something that came in and everybody was doing it, and I wanted to bring one in. And so I went to the logical person, Dr. Barr, who was in charge of this activity, and I said to him, "Talk to the people who are doing flow cytometry, find out what equipment we need and so on, and let's put in for it."

Q: What does this do?

DR. MOSTOFI: What this does is to analyze the cells. It's a DNA determination of the cells, but what you do, you can study thousands of cells at one time. You put them through a machine and it registers something, if the cells are diploid, they're aneuploid, they're tetraploid, and so on and so forth.

And so we wanted to get this equipment. Well, so I had to go through Dr. Karnei; I gave him Dr. Barr's ideas. At the time, Dr. Barr and I had talked to several of the people who had been working with this equipment for years. And we said, "Get us the equipment that we need."

Dr. Karnei decided that we should get something else. We got something else, but they forgot to contract for installation, so the equipment was sitting here for nine months. And in the meantime the warranty had run out. And then we put the machine in operation. And then the person who had told Dr. Karnei to get this equipment left, so the equipment that was brought in didn't have anybody who was interested in operating it.

But Dr. Karnei, well, he had different ideas, but he didn't have the background or the experience. When he came to the AFIP, the only experience that he had was being chief of surgical pathology at the Navy hospital.

Q: And that's quite a different kettle of fish, then.

DR. MOSTOFI: Than running an institute.

Q: But he had been working as a deputy within the Institute.

DR. MOSTOFI: He had been working as a deputy, but, you see, who did he learn from? He had Cowan and McMeekin.

Q: And Zuck, I take it.

DR. MOSTOFI: Well, Zuck was deputy director, with whom Karnei worked. And the

two of them, I think, had resolved that civilians had too much influence in the Institute and this should be reduced. So there was obviously a conflict, you see. Actually, Dr. Karnei was essentially the cause of several of the department chiefs leaving, because they just couldn't operate.

Q: Was it a matter of micromanaging, would you say?

DR. MOSTOFI: Well, undermining. Well, I don't want to say any more about that.

Q: No, but there does seem to be a certain pattern between basically Army people, and you're coming from the civilian side, but the Army, there's the support of the surgeon general of the Army and all. Well, looking over this, we've sort of covered much of the history. We may come back at another time. But, in your estimation, what makes a good pathologist? If somebody comes and says, "I want to be a pathologist," in the first place, what do you think of it as a career? But, also, what do you think are the attributes that make a good pathologist?

DR. MOSTOFI: I think a good pathologist should have the basic training in pathology, which is looking at the tissue, looking at the microscopic slide, making a diagnosis. You should be in a department that sees a lot of pathology, with a staff that is willing and anxious to teach. Fortunately, there are a number of very good departments of pathology in the country where one can get this sort of training but unfortunately, not too many autopsies are down nowadays. Now my own philosophy is that every good pathologist should have training in experimental pathology, because when you do experiments, you learn to establish controls. By this I mean that if you are testing a drug, for example, you give a certain number of animals that drug. At the same time you have the same number of animals of the same age that do not get the drug. At the end of the experimental period, when you study the experimental animals, you also examine the untreated ones to make sure that what you think is caused by the drug is not seen in the untreated animals. So, I think training in experimental pathology is absolutely essential. Most pathologists don't think so, mostly because many of them have not had any experimental background, or there is no time for it.

Q: Why is that?

DR. MOSTOFI: Oh, there are several reasons for it. Primarily, because to do an autopsy requires a certain amount of support. You have to do the autopsy, you have to do sections, you have to study it and so on. And what benefit do the clinical colleagues get from this work? Well, part of the loss of interest has been because in many of our departments of pathology the chairman has been interested in research and experimental work, and he hasn't been especially interested in autopsies. So, by and large, autopsies have been relegated to the lowest man on the totem pole. And then the hospital, of course, has to support it, provide technical help and so on to do the autopsies, cut the

sections.

Also, some clinicians aren't very much interested in autopsy because they are afraid that the pathologist might find something that they have missed. Now, fortunately, there aren't that many in that category as there are in the category who really want to know what happened. So we have that conflict.

For many years the American Medical Association and the American Hospital Association required that to get certified, you had to have a certain level of autopsies, sixty percent, seventy percent, eighty percent. But now this requirement has been essentially eliminated, so that many hospitals will only do ten percent of their autopsies. And it's a major problem doing autopsies.

We have been hoping that the Congress will get involved in this, because autopsy is the best quality assurance of what has been done to the patient.

Q: It seemed to be running in line with the spirit of the age, a desire to want to know and find out, although it does pose a risk, as you say, for the doctors who are concerned.

DR. MOSTOFI: But really, even then, I think if it helps him to learn, it has accomplished his mission.

Q: Well, this would be true, except everybody is out to sue everybody else.

DR. MOSTOFI: Well, this is another thing, unfortunately. Even at my level, when I look at a slide and there is any question about it, I wonder, Can I defend this in a court of law? Well, I shouldn't have to do that. But, unfortunately, this is the spirit of the age, and whether it's going to change or not, I don't know. I hope that it will change.

Q: Well, looking back on your career with the AFIP, doctor, what gives you the greatest satisfaction?

DR. MOSTOFI: Well, the greatest satisfaction is the opportunity to help. And basically it's the patient down there that you are helping. And that, to me, is the biggest joy in life.

Q: Well, do you get any relationship to the patients you've helped?

DR. MOSTOFI: Oh, God, not a week goes by that either some patient doesn't come to see me. If there is any question about the diagnosis, if the patient desires a second opinion on the slide or wants to obtain a recommendation about the specific type of treatment, the patient and/or his family are apt to consult me personally. this occurs about once per week. This includes Senators and Congressmen, military and civilians at all levels.

Now perhaps some departments do more of it than other departments, but because I have been at my job so long, and because of the fact that most urologists know me, and because many chemotherapists, radiation therapists and so on, know me personally

because I have contacts with them, this happens, where the patient wants to know what does Dr. Mostofi think about it.

And now, since we are charging, many pathologists want to know what is my diagnoses on the slides.

Q: Well, obviously the charging has cut down on the volume of consultation, but has it cut down on, you might say, the quality? In other words, has it cut out the nonessential, but still left the essential, which is the lifeblood of...?

DR. MOSTOFI: Well, I think that's true, but actually in some departments it hasn't affected the number. I don't believe that it has affected material in our department. I think we see somewhere about ten percent of what comes to the Institute. And that ratio has been maintained.

And now, actually, we are seeing more consultations from civilians, because of this prostate problem. What has happened is that, through the radio, through television, through newspapers and so on, a lot of people have become concerned about prostate cancer. They have no symptoms and/or signs, but they go and demand that they have an ultrasound, or that they have a PSA determination, or something. If there is some abnormality, then the biopsy may be taken. And the pathologist at the hospital or when he gets a biopsy from a forty or fifty-year-old patient, just as I had this morning, a patient whose PSA was normal, ultrasound was not abnormal, but the urologist felt something in there so he took a biopsy. Is it cancer or is it not cancer? He's a forty-three-year-old man. And it creates problems for him. So that sort of thing, the pathologist wants us to say yes, it is cancer, which is what he thought; or, no, it's not cancer, it's what he thought; or, is he wrong in the diagnosis?

Q: Well, doctor, we could probably go on and on, but...

DR. MOSTOFI: Well, you're busy, and I'm busy, so I think we could stop.

Q: Well, I really appreciate this, and I think you've provided some valuable insights into the working of this institute.

DR. MOSTOFI: I hope that I have not been too unkind with Dr. Karnei and Dr. Morrissey.

Q: Well, let future historians sort out things. Thank you.

DR. MOSTOFI: Thank you very much.