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ARMED FORCES INSTITUTE OF PATHOLOGY
ORAL HISTORY PROGRAM

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Q: This is an interview with Col. Vernon W. Armbrustmacher, of the United States Air Force, director of the Armed Forces Institute of Pathology. Colonel, could you tell me a bit about your family and your background, when and where you were born and something about your family life.
COL. ARMBRUSTMACHER: I was born in Michigan, on a farm, near a little town called Fowler, Michigan, which is about 30 miles from Lansing, in 1938, on October 8. I had one older brother; eventually, there were five boys and one girl. We grew up on a farm outside of this town. It was a very standard farm in that community, of about 80 acres. One family could handle about that size of a plot. Everyone raised a variety of crops: wheat, corn, barley, oats. We had a variety of animals: sheep, cattle, pigs, chickens, and so forth. I think the Industrial Revolution hit the farm right around that time. Horses were being phased out, and tractors and all sorts of mechanical devices appeared very rapidly during that era.
Q: Also, you were born in 1938, when you became aware of things, World War II had started and it was a prosperous time, which really was to continue for some time, wasn't it, for farms?
COL. ARMBRUSTMACHER: It seemed like we were very comfortable. We felt we were middle class. The facilities there were relatively primitive, but I guess all of us were in the same boat, so we didn't notice it. We didn't have indoor plumbing; we didn't even have electricity until the early '40s. So, as I say, the modern era just exploded into that scene, especially when the war ended. All the industrial development in the country turned towards consumer goods, and it hit our area very dramatically when I was in grade school.
Q: Could you talk a bit about your early schooling.
COL. ARMBRUSTMACHER: The very earliest schooling was in a country school, single room, all eight grades in one room. There were about 15 or 16 students, typically. Then, in a few years, that system was dismantled and there was a consolidated district. And we went into the metropolis of Fowler, population about 950, which was quite a change.
Q: Where did you go to high school?
COL. ARMBRUSTMACHER: Actually, when I finished grade school, I decided that I wanted to be a priest, and I went to a seminary when I was 13. I was in a seminary for five years. That was the equivalent of four years of high school and one year of college.
Q: Did you get a strong dose of Latin at that place?
COL. ARMBRUSTMACHER: Oh, yes, five years of Latin, four years of Greek. It was basically a liberal-arts-oriented education.
Q: Were you getting any taste of science at that time?
COL. ARMBRUSTMACHER: A little bit, but I think it was more strongly a liberal-arts type of background.
Q: Well, then, to follow through, to be a Catholic priest, obviously you would go from high

school into a college before you would go to a seminary, is that right?
COL. ARMBRUSTMACHER: Yes, a typical course for that kind of training was four years of high school in a seminary, away from home. Then four years of the equivalent of college. You'd end up with a major in philosophy. Then followed by four years of theology. And then you'd be ordained. As a matter of fact, when I graduated from medical school, the class that I was in in the seminary would have been ordained that same year.
Q: Where did you go to college?

COL. ARMBRUSTMACHER: I went to a college in Grand Rapids, Michigan, called Aquinas College. It was the same city where the seminary had been, and I had learned about the college. It's a small Catholic college.

Q: Again, was the course still...

COL. ARMBRUSTMACHER: Well, it was a standard pre-med type of course. It was basically a major in biology and a minor in chemistry.

Q: Was there a chance to be equivalent to a medical priest?

COL. ARMBRUSTMACHER: No, I left the seminary after the equivalent of the first year of college. So I transferred to this college not as a seminarian but as a regular college student. Most of my courses transferred for credits, so I just picked up as a sophomore at Aquinas College.

Q: Were you pointed towards medicine at that time?

COL. ARMBRUSTMACHER: Well, for a year, I wasn't sure. In fact, one of my first impulses was the Foreign Service. I heard about Georgetown, and I gave a lot of thought to that. But I decided, during that year, that I'd rather go to medical school, so I developed the pre-med curriculum and went that way.

Q: Well, just to get a little of the thought process, going towards being a priest and going towards being a doctor are not completely dissimilar. There's a calling there. But, at the same time, they're two quite different paths. What moved you from one to the other?

COL. ARMBRUSTMACHER: Well, the seminary and the environment in the church hierarchy I began to feel was rather rigid and stifling. I think that was the negative that made me leave. Then, deciding what to do next, what it would be like to become a priest, I thought, was very similar to what it would be like to become a physician. And I think that's why I was eventually developed in that direction.

Q: Did you have the equivalent to a mentor or a role model or somebody in the medical profession?

COL. ARMBRUSTMACHER: No. As a matter of fact, we had a family physician, when I grew up, whom I knew just vaguely. In that culture, which was a mainly German, mainly Catholic, very close-knit community, the heroes, at least as far as I was concerned, were the priests and the physician. They were by far the most-educated people, and they seemed to me the most awesome, as a child. But I didn't know any physicians personally. There was a priest, when I was in grade school, who was kind of a hero to me, and I think that had a lot to do with deciding to go to the seminary. And what that did was open an awful lot of horizons. Moving to and living in Grand Rapids, which was a huge metropolitan area compared to what I'd left, was such a broadening experience.

Q: Was Aquinas College heavily weighted toward pre-med?

COL. ARMBRUSTMACHER: No, it was, I would say, basically a general liberal-arts private college. They had an enrollment of about 1,200 students.

Q: You took pre-med and graduated from there when?

COL. ARMBRUSTMACHER: Graduated in '60. I started at the University of Michigan in medical school in '60, and graduated from there in '64.

Q: How did you find med school at the University of Michigan? This must have been quite a change from the really rather small schools that you'd had up to that point.

COL. ARMBRUSTMACHER: Oh, yes. Yes, well, the step from leaving the farm and going to Grand Rapids was a huge step. And this was just as huge a step, going to Ann Arbor, with a huge university. A secular environment versus a religious environment. Lots of shocks. But it was awfully exciting. Some of the most brilliant people I've ever met.

Q: Oh, yes, it's an outstanding school.

COL. ARMBRUSTMACHER: So that was just one excitement after another, I thought.

Q: Were there any fields that particularly attracted you at that time? You were sampling the various elements of medicine, but any that particularly attracted you?

COL. ARMBRUSTMACHER: I quickly liked the anatomy, especially the microscopic anatomy. Then, in the sophomore year, we had the pathology course, which was the bridging for us between the basic sciences and clinical sciences. I decided, by the junior year, that I really wanted to do pathology, because I felt that I had a facility for the gross and microscopic anatomy and analyzing these problems.

Q: What was the spirit of the school at the time about going towards pathology? Surgery

always seems like the place where the hotshots go. What was the spirit of the time, would you say?

COL. ARMBRUSTMACHER: I think a lot of it had to do with the department there. The staff of the university pathology department was a very outgoing and exciting staff. They were doing a lot of clinical research, which just seemed so relevant for the first time. We had been taking things like biochemistry and pharmacology. None of it was connected to why we were in medical school until you hit pathology. It was well done by the staff. Actually, a fair number of our class went into pathology, I think largely because of the atmosphere that the department created.

Q: This is so important, and it sometimes gets lost. There's a lot of recruitment going on in university training that one forgets about, directing people towards a career.

COL. ARMBRUSTMACHER: Yes, the medical school departments are very influential on students as to what they become interested in and are excited about.

Q: Was there any particular emphasis in departments of pathology, either in general or at Michigan, in what they were looking at?

COL. ARMBRUSTMACHER: Well, at least from the perception that I had, there was a lot of interest in what we would call clinical pathologic investigation, the correlation of the gross and microscopic anatomy with the effect the disease had on the body and the outcome of the patient. That was probably the biggest thrust. There was a very dynamic laboratory, looking into some basic aspects of cancer. They were developing tissue-culture techniques for culturing malignant tumors, and then manipulating these cultures in various ways. They were really on the cutting edge in that particular area. I'm sure there were other areas that I wasn't so aware of at the time.

Q: You graduated from the University of Michigan in 1964, and then that put you into your internship.

COL. ARMBRUSTMACHER: Right.

Q: Where did you go?

COL. ARMBRUSTMACHER: I took a rotating internship, which was rather standard at that time, at Rockford Memorial Hospital, in Rockford, Illinois. It was a community-oriented hospital that was closely affiliated with the University of Illinois. The rotations were surgery, in medicine, and pediatrics, obstetrics, and then an elective month that I took in anesthesiology, plus the coverage of the emergency room on a rotational basis all through the year. It was a pretty intense year in terms of time on duty and exposure to clinical medicine.

Q: Sometimes I wonder at the long hours that interns spend. After all, they are dealing with

people. It may be good training, but how does it work on the patients?

COL. ARMBRUSTMACHER: I don't think it works very well on either the doctor or the patient. I don't know, it's part of the culture. It still is; it's been modified a little bit. But the hours were incredible. On obstetrics, we were on for 36 hours and off 12. And then, when I was on medicine, for example, I was on call actually all the time for the patients I was following in the hospital, but also, every eighth day, I was on all night working in the emergency room. And when you're on all night, you usually don't get any sleep and you go right into the next day. Doing that over a long period of time, it gets kind of fatiguing. And your judgement, I don't think, is as good.

I remember distinctly, once, in the emergency room, it was two or three in the morning, and I had just lain down. Someone called because of a patient that had just come in. I answered the phone, and by the time I said yes and started to put the phone down, I was asleep again. In fact, the phone was right off the hook, and they had to come and get me. I remember talking to that patient; I was just groggy. And I remember having the same thought you were alluding to: "I don't know if this is good or bad. I don't see the good of this."

Q: I don't either. It seems like a little bit of boot camp, which is all very good and well, but there are other people concerned.

COL. ARMBRUSTMACHER: Yes, and you are the front line on this. That bothered me a lot.

Q: After doing a year of intense internship, then you moved to a residency?

COL. ARMBRUSTMACHER: Yes, and that was at Blodgett Hospital in Grand Rapids. It's quite a sophisticated secondary- and tertiary-care center. That was a standard pathology residency: two years of anatomic pathology, which is basically autopsy pathology and surgical pathology, and two years of clinical pathology, in which you rotate through the various specialty laboratories, like hematology and blood bank, chemistry, bacteriology and so forth.

Q: When you say secondary and tertiary...

COL. ARMBRUSTMACHER: Most of the patients who came there were referral patients from other physicians. Their problems seemed to be more complex.

Q: By this time, were you hooked on pathology?

COL. ARMBRUSTMACHER: Yes, I really enjoyed that.

Q: There, was it still fairly well spread out, or were you working on one particular branch of pathology?

COL. ARMBRUSTMACHER: There, it's general pathology. So the rotations would consist of

doing surgical pathology, for example, for three months. All the surgical biopsies and resections were brought to the laboratory, and you would examine them with the naked eye and describe the abnormality, select areas where you would take a sample for microscopic examination, and then, the following day, you would look at the microscopic preparations and arrive at the correct diagnosis, hopefully, and make some assessment of not only what the diagnosis was, but the spread of the disease or the involvement of the disease and prognostic aspects of the disease.

Q: You did this for about two years, and then you moved, at the same hospital, from anatomic pathology to clinical pathology.

COL. ARMBRUSTMACHER: Right, the training program involves anatomic and clinical path. The board examinations that you prepare for involve both of those areas. The certificate of qualification that you get involves both of those areas.

Q: Were the board examinations for pathology a fairly standard thing in those days?

COL. ARMBRUSTMACHER: Oh, yes, they were well established as examinations at that time. There are three days of examinations, objective type of questions, recognition of abnormalities, looking at slides and photographs and recognizing the nature of the illnesses.

Q: While you were at Blodgett, did you have any connection with or knowledge of the Armed Forces Institute of Pathology?

COL. ARMBRUSTMACHER: Yes, it was a real citadel for us. It was a national reference center, which it still is, a place where pathologists send surgical material and some autopsy material for a second opinion. So it was a place where you could get an in-depth look at a given problem by someone who specialized in that area.

Q: Were you using any of its publications?

COL. ARMBRUSTMACHER: Oh, yes, the fascicles. Also, a very typical article or scientific publication that came from here would be a review article based on a large number of unusual examples, so those references were always valued.

Q: Had you had any connection with the armed forces while you were doing this?

COL. ARMBRUSTMACHER: Well, very little. When I finished the internship in 1965, the Vietnam War was rapidly enlarging, and all physicians then were committed to the military. There was a program, called the Berry Program, where the military would defer you from coming on active duty if you were taking a specialty and they projected that, four years hence, they would need someone in that specialty. Pathology was one of them, so I applied for the Berry Program. They accepted it, put me on an inactive reserve status, and assigned me to the Air Force. I had nothing to do with which service they assigned me to. So, during my residency, I was on an

inactive reserve status with the commission of a captain, pending the completion of the pathology residency. As soon as I finished the residency, I was obligated to come on active duty for two years.

Q: The Berry Program was a great bonus to, among other places, the Armed Forces Institute of Pathology.

COL. ARMBRUSTMACHER: Yes, the military acquired, in one way or another, virtually every physician who graduated from medical school each year, either as, if they did not defer them, a primary medical-duty officer, general practioner, or a specialist whom they would defer. I think other people were able to satisfy their obligation by serving in the Public Health Service. So, many people ended up at NIH, the Indian Health Service, the Bureau of Prisons, and so forth. But virtually every physician paid two years of active duty in some sort of federal service at that time.

Q: When did you actually enter the Air Force?

COL. ARMBRUSTMACHER: In that inactive reserve status, in 1965, when I finished the internship. But I came on active duty as I finished the residency in 1969.

Q: Did you go through any sort of basic training?

COL. ARMBRUSTMACHER: I think it was a three-week orientation, you might call it, at Shepard Air Force Base in Wichita Falls. They taught us how to wear the uniform and fill out all our forms. And we did a little basic training at a camp outside of the city for three days, and learned how to march, or *tried* to learn how to march.

Q: This was 1969 when you got into it. Then where did you go?

COL. ARMBRUSTMACHER: My assignment was Wiesbaden, Germany, and I arrived there in the middle of August. Because it was an overseas tour and my family accompanied me, I was obligated for a third year. So it was a three-year tour.

Q: You'd been very busy during all this time, but you did have a chance to get married?

COL. ARMBRUSTMACHER: Yes, my wife's name is Carolyn. We met at Aquinas College. She was a major in biology, too, and I met her in some of the classes there. We got married in the sophomore year at the medical school, and by the time we finished the residency, we had three daughters.

Q: Good heavens! You were in Wiesbaden from 1969 to 1972. What were you working on?

COL. ARMBRUSTMACHER: My assignment was as the chief of anatomic pathology. First,

I was the chief of surgical pathology, and then chief of anatomic pathology. There were three pathologists in the department. It was about a 250-bed hospital at that time. It was a referral hospital, in general, for the Air Force. It was the central referral facility for Air Force folks. Professionally, it was a very, very good general-medical assignment. The morale was very good. It was considered a real plum assignment, so people were there, more or less my age or a little older, very active professionally. And it was just a wonderful experience to live in Germany from 1969 to 1972. We traveled a lot, and the children traveled with us. It was a good experience all around.

Q: Well, then you came back to what has been sort of the focus of your career, hasn't it?

COL. ARMBRUSTMACHER: Yes. I had intended to get out of the military as soon as possible and probably go into a private practice. I became interested in diseases of the brain, and they had a wonderful neuropathologist here at the AFIP, whose name is Ken Earle. He was an outstanding educator and very highly regarded in his field, and it was an opportunity, as a military person, to take a fellowship under him. I applied for that fellowship and was accepted. I gave up my date of separation; I have an indefinite date of separation, and this is where I've been ever since.

Q: Just to get a feel for it, in 1972, when you were looking towards separation, what were the career prospects for a pathologist in the civilian world?

COL. ARMBRUSTMACHER: Very good. They were very good. You could get a position wherever you wanted. The pay was relatively very good, and prospects looked very good.

Q: What type of equipment was being used for research purposes at that point, both in the civilian world and at the Armed Forces Institute?

COL. ARMBRUSTMACHER: In anatomic pathology, electron microscopy was being exploited. It had been around for some time, but it was being exploited in great depth. And there was a lot of enthusiasm about the role of electron microscopy.

There were being developed, very, very early, some special immuno preparations, where you would label a molecular probe such as an antibody, then you would flood the tissue specimen, and if the antigen that you were looking for would react with that antibody, then you would label it with a radioactive substance or a substance that would generate color, and then you could locate the probe. That was just beginning, and over the next ten years, it just exploded in terms of a tool for histopathology.

Q: Was your feeling at the time, when you were moving into the AFIP, that the AFIP was keeping up, or at the top of this type of research?

COL. ARMBRUSTMACHER: Well, I thought it was when I started, but after a couple of years, I felt that we were not acquiring some of the new techniques as fast as other academic

centers were. That became a point of frustration later on.

Q: When you came into the AFIP, who was the director?

COL. ARMBRUSTMACHER: Col. Morrissey. He was an Air Force colonel.

Q: When you're the new boy on the block, often you have a better feel for how an organization works than after you become part of it. How did you feel, at that time, that the AFIP fit together?

COL. ARMBRUSTMACHER: The various departments were directed by people who were nationally and internationally very famous. They had been at the Institute for quite a while, and they had established the reputation of the place and made it an international pinnacle of pathology.

I don't know how clearly I felt this at the time, but gradually, over time, I had the feeling that the rules that had created the organization's structure made it very successful, but the rules were changing. These people had become famous by being very intelligent and very curious and receiving large numbers of very unusual cases and studying them microscopically, basically, with a relatively simple armamentarium. The state of pathology was such that there were many disease entities and variations of the theme that had not been described. And purely by seeing a lot of material and being very intelligent and working pretty much by yourself or with a small group of similarly interested people, you could make an enormous contribution and you could publish. And that's really what I was on the receiving end of when I was a resident, those publications.

But already, I think, in the early '70s, and certainly by the mid- and late '70s, that phase was ending. It always will continue to be done to some extent. But what were needed then and what were becoming available were new techniques to look in greater depth at many of these problems. These techniques I began to read about were in other places, but they weren't here yet.

Each department had evolved by itself, and there was no culture of collaboration. Achieving another level of accomplishment clearly required a lot more collaboration than these people were used to. It meant going from a cowboy-type of mind-set to more of a teamwork-, networking-type attitude. It was a difficult transition. People, when exhorted to do these things, didn't want to do it and didn't know how, I think, and didn't perceive the need to do it.

So that was the big need, I think, to have people who were willing to bring in new techniques. No one person could master all the techniques to apply to a problem to come to a solution.

Q: When Col. Morrissey retired in about...

COL. ARMBRUSTMACHER: Seventy-four or something.

Q: He left a little early and kind of blasted at the organization, reflecting some of what you're

saying. His problem was, one, that these were all sort of independent little dukedoms.

COL. ARMBRUSTMACHER: Yes.

Q: Some were responding to requests for opinions quite promptly, others were not. He came in with an organizational mind, and it wasn't an organization, it was these individual little groups.

COL. ARMBRUSTMACHER: Right. I think, also, people had become separated from the patient. Each one of these was a patient who underwent a surgical procedure, and there was a serious question, but the sense of urgency was long gone. The volume of cases coming here was very large, and the government was doing these for nothing. And there was a feeling that the reason for existence of this place was to gather cases so people like them could study them. Oh, by the way, there was a patient there waiting for an answer. That was a big part of the problem.

Col. Morrissey came here from Wilford Hall, which is a hospital on the front lines, where the pathology department interacts directly with the clinician and is very responsive. I don't think he particularly even wanted to come here. The Air Force deputy director at that time had been here for some years and was expected to be the next director, but was abruptly transferred out, and Dr. Morrissey was brought in. I think he didn't even have a particularly high opinion of the AFIP, because of the turnaround time. When he came here, he determined to attack these problems. But he had no academic credentials; he had not published, and he'd been a practicing pathologist. So he didn't have a lot of immediate credibility with these people, who were icons in their field and very much aware of that. So I think the message was correct, but he was not able really to deal with it, because of the resistance and, I guess, in a sense, they weren't scared of him. They looked down on him.

Q: You're talking about an institutional problem that's true in many businesses. They reach a certain point where they may be doing wonderfully, but the marketing skills...

COL. ARMBRUSTMACHER: It's no longer relevant.

Q: No longer relevant or it just doesn't seem to work. Individual meisters in their own particular craft now have to pool together, and they're not doing it. You were one of the young turks, I suppose, coming in there from a place like Wiesbaden, and there must have been other doctors on the Berry Plan. Was there a certain restiveness about this?

COL. ARMBRUSTMACHER: When I came here in '72, the Berry Program was being diminished. The end of the war was in sight. The Berry Programmers came with the idea they're in for two years; they're going to get out. Some of them contributed quite a bit, others contributed very little. That transition was very difficult for the AFIP. As the Berry Program dropped out, the level of staffing decreased. The military in general was held in very bad repute.

Q: We're talking about the post-Vietnam period.

COL. ARMBRUSTMACHER: Right, and it was difficult to get physicians to join the military. There was a period there where there was very little selection, and there were a lot of bad experiences. Military medicine developed a bad reputation by the late '70s.

And then the reaction occurred. Things tightened up; it was easier to recruit people. (The Vietnam aftermath faded.) So the quality of the people coming into the military increased steadily during the late '70s and through the '80s.

Q: Going back to this early time, I know, as a young boy, wearing short pants, I used to go over to the Medical Museum on the Mall. Of course, that had been moved. What was the status, or did it cross your radar at all, of the Medical Museum when you first came here?

COL. ARMBRUSTMACHER: A little bit. The Museum was here at that time, and very few people came to see it. There were some very interesting collections related to the Museum that I used to get involved in, looking at some of the brain specimens in the microscope collection and so forth. But the staff was a skeleton staff. And then, when the Uniformed Services University was authorized and funded, the first class started here at the AFIP, and they closed down the Museum to house the first class. I think that was in '73. So that shut it down completely for several years until the new building opened up. So it was not a high-profile part of the organization.

Q: In your first incarnation, you were here from '72 to about '77, was that it?

COL. ARMBRUSTMACHER: I was a fellow from '72 to '74. It was a two-year training program. And there was another set of board exams; I took those. And then I remained here as a staff person.

My main challenge at that time was to develop a laboratory devoted to the study of neuromuscular diseases. There was a whole array of new techniques that were being developed, using enzyme histochemistry and electron microscopy, that developed a lot of breakthroughs in the understanding of muscle disease. And one of the epicenters of this development was at NIH, Dr. King Engel. And I got to know him. I went over there on a regular basis and saw his cases and saw how he set up his lab, and determined that we should set up the same kind of laboratory here. That was very exciting, because that was all new technology. So I was doing that for several years.

Then Dr. Earle, my boss, went over to the medical school, as it opened up at Bethesda, as the new chairman of a department. And I was named acting chairman of the department while he was doing that.

He did that for a year, and then, when he came back as chairman, it was obvious that my options would be to take another military assignment somewhere else and probably not be able to continue in neuropath, or to look in the private sector or at a university for a position as a neuropathologist. I decided to look at universities. While I was doing that, they offered me a Civil Service position to stay here, which I took. That was a GS 15, here as a neuropathology staff and head of that muscle lab.

Then, when Dr. Earle retired in 1980, I became the chairman, still in the Civil Service.

Then, in 1982, I rejoined the Air Force. I felt the Civil Service is nice in terms of what at least seems to be a secure type of very defined position, but if you wanted to expand or get out into other areas, it's rather rigid. In the military, I felt there was an opportunity to do that. I was talking to one of the deputy directors, and he felt that it would be a good move and I might have a chance to move up within the AFIP. There were a lot of issues percolating at the time about reform. So that's why I went back into the Air Force in 1984, and then was appointed deputy director.

Q: Going back to this early time, when you were here in the mid-'70s, it sounds like there was quite a bit of cooperation with the NIH. Or were these two institutes a little bit fencing with each other?

COL. ARMBRUSTMACHER: Well, I think it varied according to what department you were in. Each department in the AFIP has quite a different personality and history and culture. For neuropathology, we did have ties with NIH in the neuropathology activities there, and it was very friendly and very nice. Other departments had very little ties with anybody. And there was everything in between. So there may have been departments where there was sparring with NIH. But we were so isolated; as I said, that was one of the problems. But, as far as we were concerned, we were able to get a lot of help from NIH, and I think we helped them in some cases, too. And we grew because of that relationship.

Q: What about with the Naval Hospital at Bethesda, which has always had a great reputation?

COL. ARMBRUSTMACHER: In neuropath, we were consultants on their staff. Also, we had very close ties with Walter Reed. We did many conferences, looking at all their case material, both autopsy and surgical. We were involved in many of their frozen sections, with the pathology department and the neurosurgery and neurology departments.

Q: During this time, in the mid- to the end of the '70s, what were some of the major developments in neuromuscular pathology?

COL. ARMBRUSTMACHER: It was related to applying a whole array of enzyme histochemical techniques to the frozen sections of muscle. And it caused us to create, for the first time, a frozen part of the repository, which was very valuable, then, for education and research later on. Most importantly, we were much better in sorting out diseases that were due to denervation versus diseases that were due to primary problems in the muscle. That had always been a tough problem, and these techniques clarified a lot of those issues. It caused us, really, to reclassify quite a number of neuromuscular diseases.

Q: Speaking as a layman, this is all nice for the scientist, but were you able to do anything for your patients? Did these have a result for the patients who were afflicted with these diseases?

COL. ARMBRUSTMACHER: It certainly affected the way the patient was treated. If the

person had muscular dystrophy, for example, there was no cure (there still is no cure for it), but we were able to diagnose it, and we were able to pick up women who were carriers for muscular dystrophy that we hadn't been able to pick up on. And that, in a preventive way, was helpful. And those who had neurological diseases, very few of these had clinical cures. I guess the most you could say is that many of them had diseases that were nonlethal and had been previously classified in a situation of a dystrophy which was uniformly lethal. So we were able to straighten out some of those things.

Q: You mentioned the difference between the Civil Service and the military. But the military has a tendency to say, okay, now you've had your tour here, you better get out in the field. With purpose; they want a more flexible cadre of people. Both for you and for the staff here, has this become a problem, of the military making its demands to get you out?

COL. ARMBRUSTMACHER: It has been a problem. Overall, the military has been very supportive. If a person in the military comes here and wants to immerse himself or herself in a given area, if they could become a world-class expert in that area, the military has gone along with that. They felt that they had to create at least some of these people from whom to pick a future director. And if they just kept moving people out, they felt that they would not have the kind of person qualified to become a director. Not everyone who wanted to stay here has been able to, but overall, we've been able to keep a relatively stable military staff. Most military people who come here have no intention of staying here a long time. They want to just spend a few years, become an expert in an area, and then go to a general assignment, which is good for the military. It's a few people who come and find they really like that subspecialty area and want to spend their career in it. From our point of view, if they have the potential to develop an academic stature of national recognition, then we try to keep them here.

Q: The early time was the Morrissey period. When Col. Morrissey left, he made a rather notorious, or famous, sort of blast at the problems and left a little bit early. Did you see a change over time as you were watching how the thing was administered?

COL. ARMBRUSTMACHER: I didn't see much change. I think the people who were here felt that they had pretty much won. But I think the impact of the report was much greater than that. It caused a number of people to look here and see really whether the place was moving. To be a referral center or reference laboratory, you have to be on the cutting edge. They hadn't been watching that closely. They'd just assumed that, because it had such a wonderful reputation, things were very dynamic. And Morrissey's report caused them to wonder just how dynamic things really were.

The next director was Col. Hansen, an Army colonel. The next surgeon general made a number of demands on the director, and there was stress between the two. And it led to an evaluation of the whole Institute, which culminated in the creation of the American Registry of Pathology (ARP). But to get from there to the ARP, there was an awful lot of soul-searching and criticism and I guess what you would call weeping and gnashing of teeth to realize that some things had to be done.

Q: There had been some complaints that the former registry was a little bit too free wheeling.

COL. ARMBRUSTMACHER: Well, there were relationships that the surgeon general certainly questioned and wondered if they were illegal. After all was said and done, his feeling was that if you were going to have such an intimate relationship with civilian medicine, perhaps the Institute should be transferred to, at that time, HEW and be designated a national institute of pathology, much like the Library of Medicine had been transferred.

Q: It had been part of the Army Museum at one time.

COL. ARMBRUSTMACHER: Yes. The surgeon general also said, either that or cut off all these civilian ties and make it a distinctly military institute that is much more responsive to military needs.

The debate really went all the way to Congress. Congress felt that it indeed was a national resource. Since the Civil War, when it was started, the mission was to collect specimens that represented disease, to study them, to learn more about them, and then to educate the physician so that the disease could be better treated. Really that's what was going on then, and is still going on today. We are collecting pathologic specimens. We created a massive repository that sampled disease across the board, with time. And it's like the Library of Medicine, with books of the printed medical word, they collected all the medical periodicals and kept them over the long period of time. This was analogous in terms of disease samples. It sampled the same diseases that we see now, prior to the antibiotic era, prior to the chemotherapy or radiation therapy era. And that became a national resource. Academic medicine, in many cases, was interested in collaborating with our staff and doing these studies.

The other side of it was, if you cut off the academic ties that our staff have, it won't be long until they no longer function as a reference center. If you're going to be cutting edge in anything, you've got to have academic people and people with academic ties.

So Congress felt that it was true, that maybe some of these relationships weren't legal. But they allowed us to create this nonprofit corporation, called the American Registry of Pathology, to make these interactions legal.

The assumption was, if this is all that great, if it really is a national resource and people want to use it, they will come and they will bring money.

Now how do you mix their money with government money? As long as what it is they want to do with the repository and with our staff is mutually beneficial to the military, then we can take government money, match it with the civilian money, and, through the ARP, do the project. I think it's a brilliant idea, because if no one is interested, no one will come, and the government doesn't spend a nickel on the ARP. No one will come and nothing will happen.

But it is working. On the other side of the coin it allows us to use federal money for a military project and seek out someone on the civilian side who is also interested in getting that project done and see if they will help support it, so, together, we can do the project.

Each project, then, has to be approved by the board of governors. Their litmus test on all these is: "Does it benefit the AFIP and the military? And what money are they bringing?" If

they can see that this is not a one-way street, that the civilian (usually a university) will bring some resources to bear, and we will bring some, they're very happy to approve these projects.

It's allowed us to leverage the appropriated funds that we get to benefit the AFIP and still meet the interests of the civilian side. So that was the solution to the problem.

Q: This was, I think, 1976.

COL. ARMBRUSTMACHER: Seventy-six, right. In that debate, there was also a lot of criticism about turnaround time of cases and lack of participation of some of the staff in some militarily-relevant issues, which I think were legitimate criticisms. I think at least those discussions and criticisms began to have an impact on the attitude of some the staff. But it was still very slow.

Q: This solution came out of Congress, essentially. Now how was the AFIP responding? Were there people going over to Congress, sort of around the back door, saying, Why don't we do it this way?

COL. ARMBRUSTMACHER: There was some of that. I was not privy to a lot of the behind-the-scenes aspects of this debate at the time. I know that there was a group of people at the AFIP who knew a legislative intern working for Senator Ted Kennedy, and that was a focal point. I think, as the debate went on, this idea of preserving the civilian academic interface as a solution emerged. And the legislation took shape under Dr. Art Silverstien, but with a lot of discussion here. I think that the motivations were mixed: some saw it as a way to preserve the status quo, but also to respond to some of the criticisms that Gen. Taylor had raised. It was a complex issue.

In fact, one of the most amazing aspects of the American Registry of Pathology was a paragraph in there that created the role of what was called the Distinguished Scientist. I don't know if you're acquainted with that.

Q: No.

COL. ARMBRUSTMACHER: It allowed the director to enter into agreements with the ARP for the services of up to six distinguished scientists, who would be ARP employees, but would have the authority to supervise government employees, which is illegal in any other environment. The law says, "previous legislation notwithstanding." This has turned out to be an absolutely brilliant way to make change in an organization.

They weren't even used for several years. But we began to use them when we wanted to introduce a new technique to the Institute. We would hire someone who was knowledgeable in that technique, and they would supervise the laboratories and cause it to be set up in the Institute. If it works well, you have the option, after a couple of years, to convert that person to the Civil Service and make it a permanent thing. Very often, though, these are people on sabbaticals, who create it, set it up, turn it over to a Civil Servant, and then they go. It is a way of creating change that is not available in any other way.

The reason those were conceived, which I thought was very farsighted, was much narrower than that, because at that time, there was a mandatory retirement for Civil Service, and some of the people who conceived of the idea saw it as a way for them to stay longer and maintain authority, and it was created for themselves. But shortly after the ARP was created, President Carter eliminated the mandatory retirement. So these same people never took advantage of those, and those positions languished until the early '80s before anyone even began to do anything. But the idea of Congress to create the ARP, presuming that it is a national resource, creating these distinguished scientists, was an idea quite ahead of its time. It's very similar to reinventing government today. We have a track record of having started that much, earlier. [end side one]

Q: ... change. I mean you'd been here from what I refer to as the little dukedoms to a much more cooperative enterprise.

COL. ARMBRUSTMACHER: Yes, it's changed a lot. When I became deputy in '84, Bob McMeekin was the director. It was Bob's strongest intent to change the culture of the place. And he initiated a number of organizational effectiveness studies.

Around that time, too, I think some clouds were beginning to gather. There was an IG inspection of the AFIP. Dr. Mayer had received complaints. He then asked for the College of American Pathologists to come in and do another evaluation. All these things were getting more and more critical that the place was not moving ahead like it should be. And this was creating a lot of tension among the senior staff and the administration. So it was a hard time.

But, gradually, through restructuring and changing expectations and different ways of rewarding people, some of the more senior people left. And we were always able to recruit good people. I think the one thing we had to offer, especially if we went for a younger person, was an opportunity to do more, in a shorter period of time, academically than you could even in most universities. We had a good infrastructure. We had the repository. We had a lot of equipment. We didn't have all the technology that we wanted, but we brought that with the new people. And these were people who didn't have a hard time about collaborating. It was already something they'd learned a long time ago, and they started working with each other. And we really fostered this. A young person, we'd find a department they were willing to work with, and create some new way of looking at things, and they would be successful. Gradually, this thing, over a period of about four or five years, began to shape up.

It was a combination of some of the more senior people really changing, really, starting to work with the system; many of them leaving; and our being able to recruit good people. Always, when we interviewed them, we would try to select the person that would break down some of these barriers.

Q: Speaking of barriers, one has the impression that when you came in originally in '72, this was an all-male environment, practically, as far as the top positions. Did this change?

COL. ARMBRUSTMACHER: The percentage of women now among the department chairmen has increased. I don't have the numbers off the top of my head. I guess the fact is,

there are more women out there to choose from now. When you advertise a position, among the applicants that emerge there's a significant percentage of women. So it isn't a matter of deciding you're just going to go out and just hire women. There are a lot of talented, trained women now in pathology. And that's reflected in our organization, not only at the staff level but at the department-chairman level.

Q: At one point, the AFIP was preeminent in the field of pathology, you had all the specimens, and everybody was referring. Then some of the major universities began to develop their own very strong schools of pathology, also for referrals. Did this have an effect?

COL. ARMBRUSTMACHER: Yes. As a matter of fact, one of the members of our board of governors, in making that point, said that, you know, you're more or less a victim of your own success. You have created a system out there. You've trained a lot of people, and they are now doing what you did.

The role of the Institute is to look at the next level. What is the next thing that needs to be done in pathology that is new, and give all the routine stuff up. And that's really been something we've tried to foster. We still regard the second opinion as the most important way of collecting new cases.

Q: This is the referral.

COL. ARMBRUSTMACHER: Yes. The network of second opinions pretty much had been done gratis throughout the country; there was no charge for that. But then, with TEFRA and DRGs and the accountability in medicine, most people no had the luxury of not charging. And that left us here, as a government institution, not charging. And the volume of cases started to go up, because we were free.

Q: Also, I would think this would be a hedge against malpractice.

COL. ARMBRUSTMACHER: Yes. And a lot of the cases we were receiving were not the kind that we were looking for. They were rather routine cases.

So, about four or five years ago now, the ARP started to charge for all the civilian cases. And the volume went from over 60,000 down to about 40,000 cases a year. It had been about two-thirds civilian, one-third military. Now it's about one-third civilian, two-thirds government cases. The volume is starting to creep up, but at least we're charging, I think, a very hefty sum to look at each one of these cases. If the volume increases, at least the funds and the resources can increase to handle it. And the nature of the cases has changed. They're much more challenging cases.

The same with education. When we put on a course that the military needs, we open it up to civilians through the ARP. The ARP collects the tuition, and that actually helps us fund the military training program.

So, wherever we can, whether it's research or consultation or education, we're thinking dual use all the time. First of all, the military needs this, now how can we find a civilian who

also needs it to help us put it on?

Q: I would have thought that it would have been a tremendous psychological wrench for many of the people who'd been here for a long time to all of a sudden start charging.

COL. ARMBRUSTMACHER: Yes.

Q: I mean, this is turning commercial, you know. Once you do this, this is quite different from anything else.

COL. ARMBRUSTMACHER: Well, it's even deeper than that. The real shock is, there's no rule that says the AFIP has to exist. It's not written in stone. That had been considered a sacred idea. And you have to compete. You have to do something that's very important better than other people. Mostly, though, it has to complement what is needed by civilian medicine. If you compete with civilian medicine, you're just not going to win. But if you have a resource, and the resource is the repository, every university doesn't have to create a repository like that. Just like there's only one National Library of Medicine. Most university libraries cull their books when they get older, and they are very concerned about what's current. But one library in the nation ought to have everything. The Library of Congress is an example. That's the same analogy with the repository. There really needs to be one of those. Most civilian medicine realizes that, and so they're supportive, as long as you use the repository to provide new information that they need. And either they can help us or at least make it available. So the theme, then, is to develop new levels of information, using the repository, which is what we have and which is what the government is supporting.

That's a new idea, because if you sit here on the repository and you don't use it, there tended to be the feeling, "I coded these cases, they're my cases, I'm going to report on these, and I don't want anybody touching them." And the irony is, there's more there than any one human being could handle in a lifetime. The new idea has to be, "These are not my cases, they belong to the public, and I should facilitate the use of these cases to help the public." And that doesn't mean sitting here waiting for it to happen. Because it won't happen. It requires that each staff person think of a new idea and then find support. You gotta hustle. That is more painful.

But the kind of person that we're bringing onboard now is like that. They're people who have ideas that are relevant to the repository. They come here and they see an institute that can study tissue in just about any way that it can be studied. We have now really all the technology that can be applied to the study of tissue. And we've got the tissue, we've got the examples, and they're coded in a registry.

Q: And you can really use old tissue; you can go back to it.

COL. ARMBRUSTMACHER: Yes. And it's very important sometimes to do that.

And so that's the kind of person we want to hire, someone who understands that. And they also have ideas. And they know people out there, and they say, "Look, if I can get these cases, and we can get some follow-up, and we can use a certain probe, and I don't have that

probe, but I know someone out there who can help us." And so you collaborate. Or even within the Institute, to collaborate with each other, so you can do something that you couldn't do before. And you're the only one who can do it, and that's why the government is funding you, to make all this happen.

But it requires quite a different attitude from what I would say is a traditional bureaucratic feeling, "I'm paid by the government to do a job. They give me the resources, I do the job. I don't get the resources, I don't do the job."

If you don't get the resources, you hustle and you find the resources. That's the new rule. And I think the staff that we have now is really doing a good job at that.

You've probably heard about the DNA Identification Laboratory. That's a person that we hired, who is trained in medicine, pathology, forensic pathology, and he's also a lawyer. And he has molecular biology training. And he comes with an idea. The military needs this idea. It's very important to the military. And once we showed that it could work, by doing pilot studies, funding them out of our hide, showing it to the board of governors, and getting support from the board of governors and from the line (this is a line military need), they bought it. They recognized it and they paid for it. And now it's established. And it brings in a whole new level of technology, really cutting-edge technology in terms of equipment, reagents, and personnel, tat is very relevant to all the other studies that we're trying to do. So we identified a military need, it's cutting edge, it's a new level of activity, and it's now completely funded.

This has happened in four or five different directions that we're trying to develop, like environmental pathology, radiologic pathology. Image analysis is another very important area for the future of pathology, but also, military medicine and the military need to develop image analysis capability. We have many prototypes that are important to medicine, but also important to other people, that would cause them to fund developing it here. And then there's a lot of spinoff on that.

But it takes enormous energy on the part of the staff. It takes smart people with a lot of energy and persistence to convert these things from pilot studies into established programs.

Q: I would think that you would always be looking at things in a dual way. In the first place, using the military almost as a means. Luckily, the military has people, and they're under all sorts of stress. So almost any civilian medical problem has got a military relevance.

COL. ARMBRUSTMACHER: It affects the military. But even more directly, the military is beginning to think, especially now in the drawdown, why do we need a uniformed services medical corps? Why can't what we call peacetime medicine for military folks be carried out in the private sector? So, as far as we're concerned, I don't know what direction that's going to go. That's very much up in the air, and it will affect all of us.

But the role of the Institute is still as a reference laboratory. Now whether we stay with a uniformed services system, or whether it all gets contracted out, it's still going to have to have a central nervous system. The money all comes to the assistant secretary of defense--sixteen billion dollars. Now somewhere down the system, it's either going to get contracted out or not.

The AFIP is playing a very important role in the quality assurance of the laboratory arena. The CLIA '88 was passed. DOD had to respond to it and live up to the standards. They turned

that over to us, and we created a system then that implements CLIA '88 for all of laboratory medicine.

Q: Which is what?

COL. ARMBRUSTMACHER: The Clinical Laboratory Improvement Act of 1988, which created, rightly or wrongly, a whole new set of requirements to manage medical laboratories in terms of personnel qualifications and standards and proficiency testing. It was a huge new requirement. Being the central laboratory, they turned to us and said, "Make sure that we live up to those standards." So we set in place a system, a very extensive system, that feeds back to each surgeon general the certification requirements for his laboratories. And then he can certify them. We make sure that all the data is there and the Laboratory meets the standards. That enmeshes the Institute in the military medical laboratory system.

The other one is the medical-examiner system, which was set up about five years ago. This is actually the only federal forensic system in existence. It's our most operational activity. We investigate all the aircraft accidents; operational accidents; forensic issues--murder, suicides, homicides; all kinds of spooky things that happen in terms of intelligence--CIA, FBI, State Department. That department is extremely operational. It is an excellent department. We have some of the most remarkable forensic skills in that department. That's where the DNA Identification Laboratory is as well.

The military regards that as a very valuable resource. And the funding of these activities allows us to hire people that have skills that are relevant across the board. That's the other level. The medical-examiner system can fall back on neuropathology, GI pathology. If they have some strange problem they're trying to solve or that can be solved by studying tissue, they've got a whole array of experts to back them up. So it strengthens the foundation. The pistons that drive the engine are these groups of experts in specialty areas. And in order to keep that repository going, we need the cases for consultation.

Now, collectively, we have all this skill. What is it we want to contribute to new knowledge in the field of pathology? The key is to get them to work together. As a neuropathologist, I can look at an individual brain problem. But maybe there are problems that involve the brain and the liver and the heart. How can I study it together? No one else is doing that, approaching a problem on a broad front.

For a long time, we've tried to force different departments to find a project collectively that they could do that would have much more impact in terms of new information. It hasn't worked that well.

But what has worked is if you get a department, like a medical-examiner's office, or the department of infectious disease, or now we have an image-analysis department, they can look at multisystem issues. We can fund them, for example, to look at an infectious problem, and get them to work with the organ specific departments, and they can give money to the departments. So, rather than try to force departments into groups, we create projects. You can take a young staff person, who is an expert, say, in an infectious disease, who doesn't have any department, and you can give that person a budget and a project. And it doesn't threaten these other people. If I'm the chairman of neuropathology and I see this guy with a budget to study an infectious

disease problem, I can get some of that money and get on the team. And it works.

Now image analysis is another thing. Telepathology is a very important developing technology for the practice of pathology. We have experts in image analysis and putting these systems together.

We give the money to the person who has the skills, and then they work with all the other departments to put together the program. That way, you can have both: the specialties all working parallel to each other; and then these horizontal projects that we fund separately. That gets us into the next century. And then the Institute is seen to be breaking new ground.

Q: The AFIP has always had an international reputation. Its publications and all have been used, really, going way back. During this long period you've been with the AFIP, what has been its international role?

COL. ARMBRUSTMACHER: Many of our staff are involved in the international societies.

We're just finishing a meeting of the International Academy of Pathology, in Hong Kong, and we had about eight people represented there. In fact, one of our staff was elected the secretary of that organization.

We have a number of formal connections with the World Health Organization, through which we distribute fascicles to Third World countries and we gather cases that are sent here for consultation. We're very interested in attracting international cases.

We have a formal arrangement with the University of Puerto Rico, as a collaborating department. And we're looking to set up similar relationships in Madrid. We have a project going in Mexico related to AIDS. We were part of consortium of universities, NIH, CDC, working in Zaire on the AIDS problem, until the country became unstable. So we have quite a number of international projects.

The fascicles are distributed internationally very extensively.

Q: What about training?

COL. ARMBRUSTMACHER: Yes, we have Callender-Benford fellowships that have been set up, mainly through the ARP. That's one of the contributions that Don King, the executive director of the ARP, has established. Many of these Callender-Benford fellows are international students.

We have a lot of military international visitors, who study here for anywhere from a few days to almost a year. They're funded by their own governments.

We have many international visitors that are visiting the health fairs and the surgeons general, which come through here. We have growing numbers of ties with international military medical people.

Q: We were in a very head-to-head, hostile relationship with the Soviet Union up to at least 1989. Before that, had we had any contact on the medical side?

COL. ARMBRUSTMACHER: Yes, Dr. Mostofi actually was one of founders of the

International Academy of Pathology. It was centered here at the AFIP, and for a long time, it was considered one of those elements that was a conflict of interest. But we have had visits from Russian pathologists, through the embassy, and Dr. Mostofi has visited them over the years quite frequently. I would say there are about seven or eight of our staff who have very close, regular ties with the leaders of pathology and medicine in other countries.

Q: What's been your impression of some of the other centers of pathological research outside the United States?

COL. ARMBRUSTMACHER: Most of the Western European countries have very sophisticated research--England and the Scandinavian countries. The Scandinavian countries have situations that are a little bit more analogous. They have very centrally socialized systems, so they can create registries and follow patients. That's one of the areas that we're involved in. So we have ties with pathologists in Scandinavian countries that are doing similar things to what we're doing. But I would say, Western Europe and Japan stand out.

Q: You've been a fellow here, a chief of a division, an acting chairman, a chairman, a deputy director, and now a director. How do you find the administrative structure of the AFIP? Have there been any changes? How does it work?

COL. ARMBRUSTMACHER: Well, it's a cumbersome bureaucracy. The governance is complex. We are governed by a board of governors, and the chairman is the assistant secretary of defense for health affairs. The members are the three surgeons general, but also, the chief medical director of the VA, the assistant secretary for health at HHS, and a former director. They meet with us quarterly, and they define our mission. Any new project that we would want to start we would have to present to them. Any new contract with the ARP has to be approved by them. So it's a pretty hands-on development of the mission.

Our executive agent is the Army, the secretary of the Army. That's been delegated to the surgeon general of the Army.

So, as we define our mission, the board of governors does not give us money. We then turn to the Army surgeon general's office, and we compete for money to support this budget, through Army channels. We are also, then, a tenant organization here at Walter Reed. If we want to contract, we use Army contracting services. The support of the building is done by the Department of Engineers here at Walter Reed. So the budget that we get is only for operating funds. We have relationships that we have to maintain to get other kinds of support. It waxes and wanes according to the budget that the commander gets.

It's a big problem now, because the building is coming of age. It was built in the '50s, and its utilities and communications systems and everything are dated and deteriorating. And so we need a lot of support to keep the ventilation system going properly. That's a very tough problem. It takes a lot of energy to get them to spend money over here, as opposed to, say, at the hospital itself. So the competition there is very difficult.

Now, the surgeon general's office is restructuring. They're creating a medical command in San Antonio, and a lot of our channels of communication to develop the budget now have

moved to San Antonio. That happened this year. And that's taking an awful lot of energy.

So, in short, the administration here takes an awful lot of manhours, much more so than you'd like for an organization of this size. If you had the resources, or at least the prioritization of resources, entirely under the director's control, it would be a lot different. You could streamline a lot of things. But it's just not the way the federal government is ever going to work. So it's a difficult place to run.

It's tri-service. But that does not mean it's a purple suit. Each service maintains its identity here. If I come here as an Air Force person, my efficiency reports are done on Air Force forms and according to Air Force standards. So that creates additional administrative overhead. We have VA employees and Army Civil Service employees. Then, we have a whole array of ARP civilian employees, some of whom are contracted by AFIP to ARP, others come in funded through grants, others are direct ARP employees. There are about 850 people here. There are about six or eight completely different kinds of people that have to have personnel policies and systems developed. So that in itself creates a lot of overhead.

Our budget had been pretty flat in terms of operating budget. But we have increased our budget because of these projects that I was telling you about. So there are a lot of different kinds of money coming in that have to be managed.

And then, just being in a basic bureaucratic system, it takes a lot of energy to keep it going.

Q: I take it that you've found, being both deputy director and director, when you get into these things, it's farewell to research, isn't it?

COL. ARMBRUSTMACHER: Well, for me, it has been. I've been keeping in touch with a couple of areas in neuropathology that I find very exciting. There have been a number of breakthroughs. And so I've identified about four or five different areas that I'm following and I'm right up to date on, because it also keeps me in touch, then, with the technologies that are creating them. But, as far as writing papers, I haven't been able to do that much. I've done a few things, but not very much.

Q: What's the role of the Museum? [See page 24] When you arrived here, they were just getting ready to shut it down. At one time, going back to the '50s and really before that, it was a prime recruiting ground for people to become doctors. All the young people, young children, practically, who made their lifetime pilgrimages to Washington would see the Museum on the Mall and get a feel for medicine, and many would be inspired by it. Now, it's out here at Walter Reed, and very few people get out here.

COL. ARMBRUSTMACHER: Yes, it's been difficult. I remember, as a resident, going to the Museum when it was on the Mall, and it made quite an impact on me. It was closed down very shortly after I'd seen it, around '69. Then it was brought here, and the visitorship went from about 800,000-a-year-plus to just a few thousand a year. And then, when the school came, it closed completely. And then we reopened it. It was languishing.

We were visited by the Department of Defense IG, as I mentioned. When they looked at

the Museum, they were very impressed with the quality of the collections and the potential of the Museum. And they felt that something should be done to revitalize it. They suggested turning it over to the Smithsonian and getting it back down on the Mall.

We approached the Smithsonian. They were in the throes of being asked to look into developing three new museums at the time--the Indian Museum, and I think the Holocaust Museum was just beginning, and there was another museum, I've forgotten which--and they felt that they just couldn't take on another project, but that they would support us. They also agreed it was a good idea.

So, Col McMeekin, the director at that time, formed a Blue Ribbon panel of very prominent people in government and in the private sector, representing medical organizations and consumer groups, and looked at its history and the contents. It was almost a year that they studied the issue. They wanted to make sure they weren't duplicating something that already existed. But they felt that it was unique and it was very important, and the time had come for it to redevelop. And they felt it would never work unless it got back down on the Mall. So they submitted that report and dissolved themselves.

But many of the members of that Blue Ribbon panel reformed as the National Museum of Health and Medicine Foundation. When Surgeon General Koop stepped down as surgeon general, he became very interested in this effort. And he's become the president of the museum foundation.

In the meantime, we also hired a new museum director and a number of very dynamic staff people. And, just by creating new programs, the attendance has gone up. I think it peaked at 75,000 last year. So, just by energizing the resources that we had, we've improved the attendance.

But our goal is to get back on the Mall. This year, Congress passed, in the Department of Defense authorization bill, a law authorizing us basically to seek a site down by the Mall. They even specified an area that they suggested would be a proper site. It's just east of the Hubert Humphrey Building, right on Independence Avenue.

So that was a major step. Just getting that kind of authorization has already attracted a lot of interest in donating money to develop exhibits.

The challenge that we have now is to get funds for the design of a facility, and then work out a system not only to build it, but then to budget the operating costs of such a facility.

DOD has said that they would continue to support the exhibit facility the way it is. They have developed the collections, will maintain the collections, and will continue to support the staff that we have. That's worth about a million and a half a year. But they said that they did not think it was a DOD mission to build the new building or to operate it. That's a public-education mission, and they felt that that's better and more appropriate in the Health and Human Services Department.

The current assistant secretary of defense, Dr. Joseph, has a very close working relationship with his peer in HHS. So there are three important people who are very interested in us: Dr. Joseph; Dr. Philip Lee, who is the assistant secretary for health in HHS; and Dr. Koop, representing the civilian side. I really believe we're going to get something down on the Mall. It's going to be a real challenge, but this was a major hurdle, getting that authorization.

So we would visualize a whole new generation of modern exhibits, using a specimen in a

very judicious way in the exhibit, but a lot of interactive and attractively presented information to go along with it.

Q: To close, I wonder if you could talk a bit about whither the AFIP. This is 1994, as we're getting near the bi-millennium. Where do you see it going?

COL. ARMBRUSTMACHER: I see it continuing to function as the reference laboratory for the Department of Defense health affairs, whichever direction military medicine goes. I guess the big issue is: Should all or almost all of it be contracted out and done by civilians, or should it stay in the military? Probably something in between. I think the Institute needs to serve health affairs and the board of governors by being a reference center.

There are a number of aspects to that. One, I think, is to continue to provide the second opinion in pathology, which is very important. We're concerned that, in some of the new ways of delivering health care, through HMOs, in the laboratory, there are disincentives to acquire a second opinion when there's doubt about a case. We think that, whatever the military does, whether they contract it out or keep it in the military, we should always be there to give that second opinion. That, then, all becomes part of the repository.

Another thing is, there are fundamental changes going on in the way laboratory medicine is provided in health care. A lot of it has to do with restructuring, centralization, networking of laboratories so they become much more efficient and much more economical and still maintain the quality.

We have developed a network of experts within the military system that meets here twice a year now and will continually advise and develop restructuring strategies for laboratory medicine. We're not going to get into clinical laboratory medicine, but we can create the forum where the experts can come and say how we're going to consolidate--maybe a reference center here and one over there--and how to be competitive. And we are the bridge between the policy makers and the people who develop the strategies. So we're enmeshed in the operational aspects in terms of developing new ideas in medicine.

And then, on another level, with the cases, with the expertise that we have, we've identified a couple of very important thrusts that are broad, but focused, to develop new knowledge and new techniques.

One is environmental pathology. We're very good in toxicology and in the study of tissue for environmental toxins. I didn't mention, but you probably know, we have a veterinary pathology department. They have gotten us involved, in the military, in a number of environmental issues, studying the animals and doing the toxicology. We want to break new ground in environmental pathology. And one aspect of that, too, is creating registries of animal reactions to toxins, including drugs, and human reactions. In setting up these registries, there's always this question of the relevance of an effect on an animal to the effect on a human of a toxin. And we're developing that. Environmental is a very important part.

Image analysis. It's a complicated subject. But the business of transmitting digitized images of pathologic specimens around from all of our networks of consulting pathologists is going to be very important. In increased efficiency, decreased turnaround time, that process is very important.

And, more academically, the quantitative aspects of pathology are going to become more important. When we look at a slide, we say, "Well, it looks a little this way, or a little of that; it's a little more of this." But we never have had good measuring techniques. Image analysis will allow you to quantitate your observations and to analyze the value of your observations. Image analysis is very important. We have laboratories that are doing research aspects of that, which are getting support from NIH and ARPA, and then more direct applications through telepathology.

And then the medical-examiner system, and everything that that means, as I mentioned before.

And the final one is the legal-medicine department, creating a complete registry of all the malpractice events that occur, not only in the military, but now also in the VA, with their funding of that, and HHS's Public Health Service. That allows us to analyze events that occur within the federal government, point out areas where problems are, and work with the risk-management and QA groups in all of these areas.

So those five areas, I think, are going to be rapidly developing. And we're on the cutting edge of those areas. And I think that we will always be an important element for health affairs in medicine as far as the cutting edge of laboratory practice.

Q: Well, colonel, I want to thank you very much. This has been very interesting, and I know historians will find it valuable. Thank you.