ARMED FORCES INSTITUTE OF PATHOLOGY
ORAL HISTORY PROGRAM

SUBJECT: Dr. Nelson Irey
INTERVIEWER: Charles Stuart Kennedy
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Q: Dr. Irey, I wonder if you could give me a bit about your background, where and when you were born and something about your early life, please.

DR. IREY: I was born in Pennsylvania, a town called Lewisburg, in 1911, and lived essentially in small towns for much of my first few decades.

Q: What was your father doing?

DR. IREY: My father was a social worker. Well, we lived in New Orleans for a while, which isn't a small town, now that you mention it. I graduated from high school in Danville, Pennsylvania, and that was during the beginning of the Depression (or one of the Depressions). I was lucky enough to get, by various means, into the premed course at the University of Pittsburgh, and went on, then, after three years of premedical, to the medical school at Pitt.

Q: What attracted you towards medicine?

DR. IREY: Well, on both sides of the house I had uncles who were physicians; I think there were four altogether. So I sort of grew up with that background, and it was almost a foregone conclusion. I believe, that I was interested in medicine because of that, and then sort of went into it without any persuasion from anybody else or any doubt in my mind.

Q: What was the medical training you were getting? This was in the midst of the Depression, it was a very difficult time. Looking back on it, what did you think about the medical education?

DR. IREY: Well, of course, it was my first time through, and I had no basis for comparison. But I had sort of a feeling, looking back on it, that it was good, and I think it prepared me for an internship and, later, practice in an adequate fashion.

Q: When did you finish your medical training?

DR. IREY: Nineteen thirty-eight, and interned at St. Francis Hospital in Pittsburgh, and then started a residency in pathology, from which, after a year, I was called to active duty in the Army, early in 1941.

Q: What attracted you towards pathology? When did you begin to move towards that?

DR. IREY: The State of Pennsylvania requires two months of laboratory rotation in the internships and so that's why I took the two months in the laboratory. One night, while I was on duty in that two-month stint, it was late and I was reading a book on pathology, in the center of a big laboratory room, the only light on was the desk lamp. The chief of the lab, Dr. Brecken, had sort of a Germanic accent and a rough, gruff voice. And I don't know when he tiptoed in, but he got into the room and I did not realize it, and then he suddenly said, "Irey, what the hell are you doing here at this time of night?"

And I said, "Well, I'm reading pathology."

So we talked just a little, and from then on he took an interest in me. Not that he didn't before, but I mean he'd call me in to show me things that I didn't know what he was talking about. Then I did an autopsy without the benefit of the resident, and took out the spinal cord, and he seemed to be quite impressed by that. So one thing led to another, and further on in the internship, he called me in one day and asked me what I was going to do next year. And I said, "Well, I'm not sure.

"Well," he said, "how about pathology?"

Well, to make a long story short, he lined up a path residency for me in Southside Hospital, Pittsburgh.

And that's how. Sort of an incidental, accidental incident in a bacteriology room at night, late, an accidental coming to the lab late in the night. He was a night worker; he did a lot of his work at night when the telephones weren't buzzing and people weren't bothering him. So it wasn't unusual for him to come in at night. But he happened to come in when I was reading path, and he seemed to be interested that I was that interested in the subject. So that's how I got into pathology.

Q: Well, looking back on it, what is your impression of what attracts people to pathology and what makes a good pathologist?

DR. IREY: You're asking for a psychologic profile here.

Q: Sure. You're a doctor.

DR. IREY: Well, as you can gather from my previous remarks, the whole thing was basically an accident. I liked pathology; that's why I was there and reading it. And then I think three things sort of come together: the interest, the ability, and the opportunity. Now I didn't know that I had the ability, but I had the interest, and he furnished the opportunity. So when you run those three lines together on a graph, why, you have a point of intersection, and then it goes from there. I guess I could best put it that way.

Q: Well, you say you were called up. Had you been in the military reserves?

DR. IREY: Yes, I took a reserve commission as a first lieutenant during my time in

medical school. Back in college during the premed training, I was an ROTC cadet and took the advanced course. So that I was interested in that, in a way, enough to take part in it. And then, when they were preparing for what they presumed would happen, and what did happen--World War II, I was called to active duty. And that's how I got into the Army.

Q: So you went in in 1941?

DR. IREY: Yes.

Q: Well, that was then prior to our entry into the war?

DR. IREY: That was in March of 1941. Pearl Harbor was next December, yes.

Q: The draft was just getting underway at that time, wasn't it?

DR. IREY: Well, yes, because I got a nasty note from my Draft Board when I was already in the Army, wearing a uniform. I apparently had failed to let them know. I shouldn't have registered, because I didn't have to, because I was already in the Reserve Medical Corps. They said if I didn't let them know where I was, quite soon that I would be in serious trouble. So I wrote and signed my name as "First Lieutenant Nelson Irey." So, yes, the draft was in force then.

Q: Where did you go when you came into the Army?

DR. IREY: My first assignment was Carlisle Barracks, Pennsylvania, south of Harrisburg. And there it was sort of an orientation. We were all civilians in brown suits, and we had to learn to salute, and how to put our insignia on, and a little bit about the protocol of the Army. Then I was assigned to the station hospital laboratory at Indiantown Gap, Pennsylvania, which is fifty miles from where I initially was called. I was there for two years in the laboratory.

Q: Working on pathology?

DR. IREY: Yes.

Q: Any particular specialty?

DR. IREY: No, it wasn't a time or a place for specialization there. This was an 850-bed station hospital that furnished the medical service for the 28th National Guard Division, Pennsylvania. That's where the Division was federalized and had training prior to going overseas. So this was basically a community-type hospital. Anything that required, you might say, special diagnostic facilities or therapeutic facilities had to go elsewhere,

usually to Walter Reed. So we were a basic, general-type medical facility, and I was there for two years.

Q: So this was 1943 or so. Then did you follow the division to Europe?

DR. IREY: No, I was in post personnel, you see, the division was another group. We were part of the service, like the Quartermaster Corps and so on.

No, then I was ordered initially to the ship hospital platoon service. At that time, they were gathering a small group--a doctor, a dentist, a few nurses and corpsmen--to deadhead across the Atlantic with the troops, and then come back with that same ship that would be filled with convalescent wounded. They needed a certain degree of medical service, dental service, on the trip back, so we furnished the basic, relatively primitive medical service.

I went to Norfolk, and I was there just a couple of weeks. None of us were really looking forward to this kind of business. The torpedoes were said to be flying, and so it was dangerous to be alive.

I was ordered then back to Carlisle Barracks--without any influence on my part. I didn't know anybody and didn't say, "Senator," or, "Representative", will you get me out of this?" But they all thought I did have pull somewhere. But I was ordered to Carlisle Barracks for six weeks of basic training. Then I was ordered to the cadre of an Airborne division down at Fort Bragg, and I went there.

Q: So did you finish the war at Fort Bragg?

DR. IREY: No, no, our division...

Q: Which division was this?

DR. IREY: It was the 13th Airborne Division. We trained there, and initially we were going to the Pacific, but then we instead went to Europe. We went to Europe in January of 1945. I think we were the last division to arrive in Europe, and, after the war was over, we were the first to leave. We were then slated for the invasion of the Japanese mainland, and then the A-bombs went off at Nagasaki and Hiroshima, and that was all canceled.

Q: Well, we've come to the end of the war. Did you stay with the military?

DR. IREY: Yes, I took a regular commission and went on to a residency in pathology, continuing what I had left in Pittsburgh. My first station was Fitzsimmons in Denver, and then I went on for my final year of residency to Letterman in San Francisco.

Q: During this time, as a pathologist in the Army, what was your impression and contact in a working way with what was then the Army Medical Museum, as I think it was called

at that time?

DR. IREY: Well, I had had experience from my first two years in the Army in utilizing the consultative services of the Army Medical Museum. I knew they existed, I had great confidence in them, and they had an excellent reputation. And so I was not unacquainted with it. And we of course used them in a consultative way on difficult cases while I was at Fitzsimmons, and also while I was at Letterman. So this was sort of a reference center, a focus for consultations on difficult cases.

Q: As a working doctor out in the field, how did you find the response time and the responses from the Army Medical Museum?

DR. IREY: Well, I don't remember any, you might say, criticism or feeling of difficulty in getting their cooperation. They were the mother-house, and we awaited their word with bated breath.

Q: At that time, did you have any desire to get yourself assigned there at some point?

DR. IREY: Not at that time. No, I was just getting training, with the idea of serving then in various hospital laboratories in support of patient care.

Q: You mentioned that at one point in your early career in the military, in the post-war time, that you dealt with...was it General, or he was at that time Doctor, Ash?

DR. IREY: Yes, Colonel Ash; he never did, as they say, make general. Yes, when I got back from Europe at the end of the war, and with the residency assignment in view, the surgeon general's office saw fit to give me temporary duty at the Army Medical Museum for a couple of weeks, en route to Fitzsimmons to pick up my residency. So, while there, I got to know the staff. It wasn't nearly as big as it is now. Colonel Ash was the director, and he used to walk around most of the time in a pair of old suntans with a rope belt, and the kind of slippers that slop, slop, slop, you know, when you walk. Very informal. And I played ping pong with him in the lunch room, downstairs in the basement. He was very informal and very likeable.

Q: Sounds like he must have driven his superiors crazy.

DR. IREY: Well, he wasn't a spit-and-polish Army man, no, that's right.

Q: Well then, to move on with your career. You were first at Fitzsimmons and then at Letterman, continuing in pathology, I assume?

DR. IREY: Yes, those were training assignments. And then, as I left Letterman at the end of my residency, I was assigned as chief of the lab at Valley Forge General Hospital.

It was there that I was studying for my American Board of Pathology exams in anatomic pathology, and I persuaded the colonel of the hospital to let me have about six weeks' time off to come back to the Army Medical Museum for the purpose of studying and looking at slide sets, to sort of polish off my residency training and make it more likely that I'd pass the Board exams. Because that was a very critical point then; it was sort of like the lawyer passing the Bar exams. So he allowed me to come down there. And I think I read one textbook (I think it was Moore's textbook) completely, from one end to the other, during my four or six weeks. I went through about twenty or thirty study sets here. So I was pretty well cocked and primed bor the Board examination.

Q: Could you explain what a study set is?

DR. IREY: A study set is a collection of microscopic slides, and the accompanying clinical histories in written form, in a syllabus, that one studies. These study sets are, as a rule, in special areas, like gastrointestinal tumors, renal diseases, and so on. And you use the microscope. I played a game with myself, I would look at a slide as an unknown--tabula rasa--and try to make up my mind about three things: what was the site (the organ); what was the diagnosis; and what was the cause. Then I'd look at the answer. And in that way I was sort of testing myself and getting used to looking at things as unknowns. And the Institute at that time (and I'm sure now has probably more) had an excellent spectrum of boxes with slides, and syllabi with the slides as training media for, well, not only the exam, but for future competency as an interpretive pathologist.

Q: Well, how would you come in at that time? More or less you'd get yourself on TDY orders to come down to the Institute, and then at the Institute they said, well, here's a corral, here's a microscope, and here's a set of slides?

DR. IREY: Well, it's like Abe Lincoln said about chewing tobacco: he said he had the makings and the habit, all he needed was a place to spit. So they gave me a place to spit, and I had the habit, and I got the makings down in the Loan Department.

Q: So there was a great conjunction of need and...

DR. IREY: Supply and demand.

Q: When did you come down here then?

DR. IREY: Well, let's see, that was 1947. I took the exam and, fortunately, passed it. And then, in those days, they were cutting out the fat of the armed forces, and they closed Valley Forge Hospital. So I was assigned then to Germany, and I was there in Frankfurt at the 97th General Hospital.

Q: My daughter was born at the 97th General Hospital, in '55.

DR. IREY: Well, I was there until '54, so you were there, probably, when I was just leaving.

Q: Then, to move on, when you left Germany in '54, where were you assigned?

DR. IREY: I was assigned then to Letterman in San Francisco, as chief of the anatomic pathology section, and I was there six years. I think about two years after I got there, the then-chief of the laboratory left the service and they moved me up to be chairman of that department, and I was there four years.

Q: You came to the AFIP in 1965, so that takes you up to about 1960.

DR. IREY: Then I was assigned to Walter Reed as chief of the lab here, and I was here four years.

Q: Could you give me a feel for the relationship between Walter Reed Hospital and having the AFIP put here? Here you were, still running pathology for a working hospital, I assume, and having the Institute right next door by that time. How was the relationship?

DR. IREY: Well, both formal and informal, very good. For instance, my office was up on the second floor of this building, just off the elevators. We did our anatomic pathology, our surgicals, on the second floor, where the Cardiovascular Department is now, and we did our frozen sections up on this second floor. We were connected to the surgery office at Walter Reed by pneumatic tube, and they'd put a specimen in a little carrier and shoot it up the tube to us, and we'd make our diagnosis, and then there was a squawk box there, and we'd get on that and tell the people in the surgical office, and they'd carry the message into the operating room. They didn't connect up the sound for our reports to surgery where the patient was, because sometimes they're on local anesthetic and can hear, and they may not wish to have them know, at that time, under those circumstances, what the diagnosis was. And then we did our autopsies in the basement of this building. So our laboratory was sort of an appendage at the AFIP.

Q: Well, did you find your work sort of spilling over, going over and saying, What do you make of this?

DR. IREY: Oh, sure, yes. Yes, and they were very cooperative. Instead of having to, as I did at Indiantown Gap in the early part of the war, having to wrap something up and send it through the mail and wait for the mail to come back, I just went around the corner or up the elevator and did the same consultative operation.

Q: How about the spirit of the Walter Reed Hospital? You had an obvious reason to be

very close to this institute, but did you get any feeling that there was some antipathy between sort of the working hospital and having the AFIP sort of plunked down there on one side?

DR. IREY: Oh, not really. It irked us at times, because of course we were overshadowed in reputation by this institute, and we were in the hospital there and were not at the Institute, which was the reference center. I was on the Tumor Board as a staff member of the Walter Reed Hospital, and one of the clinicians would ask, "Well, what does the AFIP think about this?" And of course that was always a little bit disconcerting because we were not being accepted as, in a sense, authorities, which we felt we were, of course. But we got along; really, it was no big deal.

Q: I'm just thinking of the normal institutional things. I would think there would also be, perhaps, a little bit of your saying, "Well, you know, we're real working people. We have patients out here and we have to deal with it right away, and you people are sort of ivory towerish." Did that come in at all?

DR. IREY: No, not really. No, it was more that some of the clinicians at Walter Reed Hospital, rightly so, looked on the opinion of the staff here as better than my opinion or the members of my staff. And that's natural.

Q: Then you left Walter Reed and moved over to here, or was there a hiatus?

DR. IREY: No, I was thinking of getting out of the Army, somewhere around the mid-sixties, and I already had one or two possibilities lined up in the civilian sector. And then General Joe Blumberg, who was director here at that time, called me in one day. He knew I was thinking of getting out, and he asked me if I'd be interested in taking over a new thing here, a registry of tissue reactions to drugs.

At that time, the drug explosion, so-called, where a lot of synthetic drugs, a lot of new drugs, a lot of powerful drugs, antibiotics and antineoplastics, had developed, beginning in the 1930s. And that was the beginning of what they called the drug explosion, a great increase in the therapeutic measures that could be taken.

The National Academy of Sciences, here in Washington, had a drug research board on its roster, and they had recommended, in view of this "explosion," that somewhere a registry, a focal point for collection of these adverse reactions that were occurring in increasing numbers, would be set up. So the idea was theirs; the place decided on ultimately was the AFIP. And General Blumberg offered me the job, and I took it. So it was a new unit in the professional pathologic team here.

So that's how I happened to come here, and I've been here now for over twenty-five years.

Q: How did your unit fit in? I would imagine it would cross an awful lot of lines there, because people were being treated for cancer, for...well, for anything you can think of, and they would be taking drugs, and they would be trying experimental drugs. So you

must have been in everybody's field, in a way.

DR. IREY: Yes, and that was one of the initial concerns of the staff, really. The AFIP staff is organized and structured along anatomic lines; that is, there's the hepatic, the skin, the orthopedic. And this cut across all lines, as you indicated. There are a number of other, so-called maverick, units here--there's a Prisoner of War Registry, there's a Geriatric Registry, and the Pediatrics Registry--that are not oriented anatomically. So there was some question whether they needed this kind of a thing; they could do their own reactions to drugs.

Well, anyway, the ultimate bottom line was that this new Adverse Drug Reaction Registry was accepted, incorporated, staffed, and begun, in 1965.

Q: Was there a feeling that this was well and good, but was this necessarily military? Shouldn't either the drug companies be financing this, or one of the major research hospitals be doing this?

DR. IREY: Actually, that was the initial coal, if you will, or fuel, that fired, or paid for, this Registry. There were four cosponsors. There was the American Medical Association, the NIH, the FDA, and the PMAF, Pharmaceutical Manufacturers Association Foundation. So that you had the makers, the users, the policemen, and the evaluators, putting money into this effort. And they did that for a number of years. They gradually peeled off, because I think the feeling was, among those sponsors, that they would initiate something, and fire it up, but if they continued to support it, and did that in other areas, they'd gradually peter out as far as their bank accounts went, in that effort. So they preferred to start things, and then, after a decent interval, drop out and let the organization that they had sponsored find financing elsewhere.

Q: Was there any problem with getting money for this type of thing and absorbing it into the military? There's a tendency in the government, anything that comes in goes into the General Treasury, and it's very hard to pinpoint it. Were you aware of any problems?

DR. IREY: Well, there was an organization called UAREP, Universities Associated for Research and Education in Pathology, that was set up to take care of just that point that you made. Money was received from these four sponsors, funneled into that civilian office, and my staff and I were all civilians, we were not military men, and our paychecks came from UAREP.

Q: Had you left the military?

DR. IREY: Oh, yes. When I took this job, I retired from the Army and was completely civilian. My secretary and my initial lab technician (there were three of us starting this) were all civilians. Then, as they (the four initial sponsors) petered out, the transition was made by me and the staff of this Adverse Drug Reaction Registry to a GS, or civilian,

Civil Service employment status.

Q: Initially, in '65, what were the major areas you were looking specifically at?

DR. IREY: Well, it was the same sort of thing as when I got into pathology--random, planless, accidental.

We were here a little like a country doctor when he first comes to a small town. He has no patients. He may walk around with his black bag in the streets and be seen. Then he has one or two, and he hopefully does well with them. And then this begins to build up the knowledge of the people of the town that there is a new doctor and he took care of Sadie Smith and whatnot and so on.

So we were here and we...advertising isn't the word, somehow we made contact, like going to national meetings, having exhibits there, and made the medical profession aware of our presence and what we could do. So gradually we developed a sort of a general practice, if you will, the influx of cases--slides, blocks, tissues, history--of alleged adverse drug reactions that pathologists sent us as they became more aware of our existence. So we sort of built up in that way, again randomly initially.

Then, as a focal point, collecting relatively rare cases, we can begin to classify them in clusters. And we may have a cluster of ten cases that it would take one man in one place a lifetime to get one case of. And by collecting from a large area in a shorter time, we were able to gather clusters and study them in detail and publish on them. So that again it was like a circle that got wider and wider, with our publications and the awareness of the medical public that we existed.

Q: Were there any particular drugs that you kind of zeroed in on initially? This may be way off, but you were there in the sixties when a lot of the younger people, and this obviously includes the military, were experimenting with the cornucopia of the pharmaceutical outfits. LSD was the most prominent, but there were many other things. Many of them were not designed to be hallucinogenics, but were being used for this. Did you find yourself getting involved in this sort of thing?

DR. IREY: Well, there are drugs of use and drugs of abuse. The influx of cases into our Registry initially, and it has continued to be this, was primarily drugs of use; that is, therapeutic, diagnostic, and prophylactic drugs, particularly the new drugs that were not just symptomatic-type treatment drugs. That is, they were strong enough, powerful enough to be directed against bacteria of various sorts and against tumors. And anything that will kill a bacterium or a tumor cell should at times harm the host cells. And this was what was happening. You don't get very many adverse reactions from symptomatic drugs for headaches and diarrhea and pain and so on. So that a new ball game came into the fore when they began to produce these more powerful drugs.

Now my grandmother's brother, practicing medicine in the country in central Pennsylvania, he and his father practiced from about 1850 to 1925; around the turn of the century they could pick, in their practice, from about two hundred and fifty drugs and put

them in their black bag. Now, we have twenty thousand so-called prescription-type drugs, and there are several hundred thousand over-the-counter drugs, so your word "cornucopia" really fits the bill in describing the present status as to the vast number of drugs that are available.

And, as I said, their character, their categories tended to shift the center of gravity from symptomatic into etiologic killers, in a sense, of bacteria and tumors. And I think we reflected here, in what we got, what was happening outside. So we didn't chose, we didn't ask for, we didn't solicit any kind of a drug. We were sort of passive, like the girl at the dance--she sat there until somebody asked her to dance. Well, we sat here until, well, dancing with what was sent to us, so to speak.

Q: Did you find yourself seeing a certain type of reaction, and you're waiting for these things to come in, and you're building up your Registry. But did you ever sort of toss off to, say, other elements, to university hospitals or something, saying, "We're getting an interesting development here, perhaps you might want to look at this in depth. We can't, because of our, you might say, passive position." Did you ever have that type of relationship?

DR. IREY: No. No, we've never acted and reacted with medical centers in that sense. You get to know people personally over the years in various parts of the country, and you meet them at national meetings, you talk to them over the phone when you want more information on a case. And so you're able to communicate, at times, "Well, we're interested in drug X, particularly blah blah, and if you have any that fit that category, why, we'd appreciate very much your sending them in." So that does happen, but we didn't farm-out projects generally to any local persons, because, as I said, the gathering of cases, even at medical centers, is not up to a country-wide focusing, as we have here. So that our chances of getting that, you might say, broad spectrum of any particular entity--target-organ and drug and even a particular diagnosis--is much greater here.

That's one of the, I think, virtues of the Institute, or anything like that which is a central focus, gathering not only from this country, but actually from overseas, foreign countries.

Q: Well, let me ask a question on this type of thing, which is very much in the spirit of the 1990s now, and that is, women and medicine. Obviously, the Armed Forces Institute of Pathology's primary concern is with military personnel. Female personnel represent a relatively small number, even when you throw in dependents, when you think of the veterans and all this. So that the preponderance of cases coming to you, the great preponderance, I think, would be males having whatever problems. And although you were getting references, do you feel, particularly at that time, that there might have been an overemphasis on males with pathological problems? Or did this really make any difference in what you were dealing with?

DR. IREY: I have the impression (and this is sort of a gut feeling subject to proof and

confirmation) that our influx of cases as far as male and female goes is about balanced; there is no striking preponderance of males. One of our busiest areas here in the Institute, under Dr. Jason Norris, is the breast- and gynepathology.

Now Colonel Ash was here for a long time, and one of the inheritances we have from him is a liaison with many civilian pathology groups and many civilian clinical groups. Somebody facetiously said once that he spent many a bottle of gin or whatever, in a smoke-filled room, building up these liaisons with civilians.

So, although our name connotes that it might be, I don't have the impression that we're very dominantly male in our caseload. I can't give you, unfortunately, a breakdown, in regard to my particular department, in that regard.

Q: Well now, you came in in '65 and have been working here since that time. Have you been in charge of basically the same type of work during that period of time?

DR. IREY: No, it's an interesting question. We came in, our title "Registry." About ten years ago, we were changed in title (it was sort of a promotion, managementwise) to a "Department," because we had had added to our title, "Environmental." So now we changed from the Registry of Tissue Reactions to Drugs to the Department of Environmental and Toxicologic Pathology. Actually, the drug itself has dropped out of our title, but it's still there and active, still living and well.

And, along with that, we have had added facilities, resources, and people. We now have in my department, I think, fifteen people, starting with three back in 1965.

And we're particularly developing the chemical and toxicologic area. We're trying to meld the molecular, for instance chemical toxicologic, with the morphologic, for instance microscopic, cellular, into one department, so that there's not this separation. We're trying to develop that synthesis, if you will, integration, and we, I think, will be able to; we're starting to, already. I think it's a natural union, and I think it will be to the betterment of the whole effort, having the chemical and the cellular in the same wing.

Q: You say "Environmental" in the title. Environmental means different things to different people. In the AFIP sense, what did and does environmental mean?

DR. IREY: If you take a drug, it's usually willed by you, or by your doctor who influences you, to take it. Environmental causes of disease are not that kind. We may be breathing air here that has a "baddy" in it. We're not aware of it, we didn't ask for it, it may kill us in twenty years. So the "Environmental" has a certain vagueness about it. The vectors that carry the environmental agents--air, water, soil, food, and so on--are more or less silent, generally; unidentified, perhaps for a long time; unrecognized; their relation to human illness not a part of our conscious knowledge. So that the environment is sort of a slinky factor, like a ghost, if you will, that comes in without our knowledge, without our will, without our agreement, and without our desire.

That's one look at the difference between what we started with and what we're adding to now in the way of the environmental versus drugs.

Q: One very obvious one (I know, having served in Vietnam and seen its effects) was Agent Orange, a defoliation agent. Because it was, very definitely, military personnel who were dealing with it, did you get involved with that?

DR. IREY: Yes. We have now in our department files probably pretty close to five thousand cases of the material from Vietnam veterans, with the question being asked: Can the illness, whatever it is--cancer of the lungs, brain tumor, whatever--be related to the exposure to Agent Orange? And we published on about half of that group, about a year and a half ago. Our conclusions at that time were that we could not make an event-pair out of Agent Orange and whatever it was--inflammatory, neoplastic, degenerative. And that's generally the findings in other studies.

Now that brings up a point. Currently, as you know, there's the Kuwait fire problem of smoke.

Q: For the record, during the 1991 Gulf War between allied forces and Iraq, over Kuwait, many of the oil fields were set on fire.

DR. IREY: Actually, there were about seven or eight hundred oil fields that were set on fire as Saddam Hussein and his troops left Kuwait and retired into Iraq.

Unlike the Agent Orange situation, where there were few, if any, background reference points established at that time, the opposite is true here with the Kuwait situation. There were ninety-two autopsies done on Kuwait deaths, beginning in the summer, I think August, of 1990, until late spring or early summer of 1991. They were done at Dover.

Q: This is Dover Air Force Base, in Delaware.

DR. IREY: Yes. They were done by the medical examiner's team here at the Institute. And arrangements have been made with Dr. Froede and his group that as they finish the autopsies, the gross and microscopic, and have slides available, they will run them by us, and we will capture certain data and include them in what we're now starting, which is the Kuwait Registry. In addition, they have taken samples, at Dover, of blood in urine, and aliquots of liver, kidney, spleen, brain, lung, and so on, which we now have in our freezers awaiting screening for heavy metals and polycyclic aromatic hydrocarbons. We're looking for the products of the pyrolysis of the crude oil, as these oil wells burned, as reflected in what might have gotten into these bodies. Now they have been taking air samples over there during this period, getting a feel for what of the pyrolytic products they can capture, on these filters and so on, in the air samplers. So that we'll have that data, and we'll have the ninety-two autopsies, where about half the deaths occurred before the smoke, and about half during the smoke, so that we'll have sort of a built-in control there. In addition, we have another group. All of this serving as a baseline for a reference point for future interpretation of what the "victims" of the smoke exposure might be

suffering from. Now that's the current thing. We'll be looking for any acute changes, in, particularly, the lungs, in these ninety-two autopsies.

Now we have set up, for future prospective study of the problem, a network of two hundred and thirty hospitals in the United States. It includes VA, Army, Navy, and Air Force. We've already made contact with them, sending out letters, you might say, directing them, or asking them, when Kuwait veterans die, to send us the same type of material that Dick Freide's group is giving to us from Dover. In other words, we'll be looking there for chronic residual effects of the smoke--tumors, pulmonary changes, and so on--so that we have a current fix on what the smoke might have done to the soldiers. And we're planning a future prospective fix on what the later changes might be.

Q: Have you had any contact with the civilian medical facilities in Kuwait? (Because, obviously, these people will have had more than a sufficiency of the problem.) Or would this upset the sampling?

DR. IREY: Well, it's a good question. And we have what we think may be a sentinel case, of a civilian from Kuwait. It was sent to us, without our solicitation, by a local pathologist from an ARAMCO civilian hospital.

Q: That's Arabian-American Oil Company.

DR. IREY: Right. They had this little girl, five years old, who was exposed for five days to smoke (although I don't know why a little girl was out there, alone and apparently unattended, for five days in the smoke). But at the end of that time, she was apparently taken from that environment, and in a few weeks she developed respiratory problems and was hospitalized. They did a thoracotomy and took a wedge of lung out and sent it to us. A complete surprise to us. And we found there a condition called obliterative bronchiolitis, or *bronchiolitis obliterans*, where the smaller air tubes are variously-to-completely plugged by a fibrotic and inflammatory reaction, so that her aeration function of the lung was decreased, enough to give her symptoms of shortness of breath. And this was, as I said, sent to us spontaneously from the ARAMCO Hospital.

We diagnosed this finding, sent back a report, and we've asked the pathologist who submitted this material, if he has other native cases of this sort that have this symptomatic clinical picture, and the history of the exposure to the smoke, to be so kind as to send us material on these other cases.

So far, we've had no response. I've been in touch with the ARAMCO headquarters, down in, I think it's Dallas, Texas, trying to get some movement in that direction. So far, I've been unsuccessful, but we do hope to get, as sort of background material, sort of a positive control by which to judge or compare our troops and any findings that they have that might be similar, or, equally important, not found in our troops. So we'll be, I think, in much better shape to evaluate later findings, in view of the current effort being made in this project.

Now with the little girl, the finding in her air tubes is not pathognomonic of

pyrolytic products of burning of crude oil. It may be caused by any number of gases--ammonia, nitrous oxide, including war gases--and it's seen also in certain viral infections. So we wrote back asking for serum samples, on which we might do a titer against three or four kinds of viral agents that cause pneumonia.

And so I'm saying this *may* be a sentinel case; we're not sure that we can ascribe it without doubt to the smoke, but we're tying to rule out other things.

So that is an example. In fact, some of the GIs over there are referring to this as "Agent Smoke," instead of Agent Orange, sort of predicting that maybe in the future there may be problems similar to the Agent Orange.

Q: With Agent Orange, this became a very highly politically charged event. And many of those who were opposed to the Vietnam War have used this to show the horror of the thing and that we were poisoning the country and all, and there are multibillion-dollar lawsuits hovering out there. In dealing with this, did you find yourself having Department of Defense lawyers hovering over you on the wording of how you did this; not to influence you, but to make sure that it was done very carefully and all that? Was this a problem?

DR. IREY: No, I had no outside legal-influence attempts made. We're sort of in an isolated ivory tower here in some respects. That's not entirely true, because I have been involved behind the scenes with some more current and non-Agent Orange environmental problems, with the Department of Justice, in suits against the government for alleged bodily damage. Hazardous dumpsite scenarios, yes, but not on the Agent Orange.

Q: Asbestos has been found to be a cancer-inducing material, and it was used in insulation throughout everything, practically. But on, say, military ships and military vehicles, has this been something that you have been concerned with?

DR. IREY: The problem of the asbestos and the generation of, or the induction of, lung cancer or the thesothelioma (which is the covering of the lung) tumor, has been well documented by studies over the last decade or two, and is an accepted, you might say, event-pair. The major efforts along this line--asbestos and its tumorgenicty--have been done by the Department of Pulmonary Pathology, under Dr. Hochholzer and Dr. Koss. And we have been related, in a consultative way, with that. It's not been one of our major projects; that's where the anatomic division of this staff has dominated that particular problem area, and we've been sort of along in a learning capacity with them.

Q: Well, I take it, then, that to a certain extent you take a look, and where obviously something like asbestos is environmental, it was in everything as an insulating material, and certainly in military vehicles and ships and all, but when it tends to concentrate in one area, let us say, particularly the lungs, then you would tend to back away and let them take over. Is that right?

DR. IREY: Oh, yes. Now the things vary. For instance, the Kuwait project is dominantly in our department now, because there has been no target established as yet except this one case that might be definitely smoke-related, that little girl from Kuwait. It is entirely possible that, let's say, organ X turns out to be the site of serious chronic degenerative, or tumofactive, changes. It may well then shift the center of gravity of that project from us to an appropriate anatomic area. That could happen. More likely, it would be a joint synthesis of the study between the two departments.

Q: Well, after all, you are the Armed Forces Institute of Pathology, and the object of the armed forces is not only to defend the country, but, in case of need, to go out and do bodily damage to the other side. You have new weapons being developed and all. Do you ever get involved in somebody saying, we've got this wonderful weapon gas, or vehicle, or something, what do you think about this as far as what it will do to the people who are using it? Not the people against whom we're using it, but the people who are using it. Does this come in at all?

DR. IREY: Not really, no. We're in contact with members of the armed forces staff at Fort Deitrich and Aberdeen, where they're handling the sort of problem that you're referring to.

Q: Aberdeen and all, these are ordnance areas.

DR. IREY: Yes. We coordinated with the group at Aberdeen. In fact, two of our laboratory staff went to Kuwait twice to collect samples for our toxicologic screening, particularly the heavy metals, with three or four members of the team at Aberdeen. So that we're in, you might say, operational contact with them. We have not, however (to answer your question directly), been related to the possible effects of some new weapon, in a consultative capacity. Now one of our staff is a radiation pathologist, and he occasionally gets cases in consultation regarding radiation exposure and the possible relation between that and a particular disease that the person in question is suffering from. But we have not, on any, even small scale, been coordinating with the appropriate agencies (in answer to your question in regard to judgment on environmental factors relating to new weapons and danger to the people who are studying the problem), no.

Q: How about with nuclear propulsion, which is, I guess, exclusively a naval thing, do you get involved with that? It's in the environment if you're in a submarine.

DR. IREY: No. No, we are, in a way, a new boy on the block in our capacity to be able to handle environmental problems. Although we've had the title for ten years, it's only in the last year and a half or two that we have had the staff to allow us to competently work up, from these two angles--the toxicologic and the morphologic--these problems.

So that our contact with the people at Aberdeen, I think, illustrates that we're beginning to be known and to coordinate and to cooperate with other agencies. And I think this will grow. Just like I said, the Adverse Drug Reaction Registry was like a

general practitioner in a small town, starting out in practice. You have to be known, and there has to be a certain amount of trust in what you're doing and in your opinions. And that doesn't come by fiat; you've got to earn it. And we hope to earn it.

Q: Well, "new boy on the block," I mean, after all, the Army Medical Museum has been around since about 1865 or something like that. How has your department fit in, in terms of organization, with the other departments? If you sit in on departmental meetings, do you find you have to sort of fight some bureaucratic battles to get recognition?

DR. IREY: No, not really. We have an active inter-departmental consultative connection, going both ways, with most of the departments in this Institute. Apparently we add to their analysis and diagnosis of pertinent cases, and they find it valuable to ask us our opinion. And, conversely, we take advantage, if you will, of their competency in particular anatomic areas in our problems. The problem of causation, both environmentally and drugwise, is more or less a linear problem that is ours. What we seek from them is the endpoint diagnosis morphologically; to firm that up, Is this whatever? And then we have the problem of denying or confirming that indeed whatever the end result was that they've helped us with was induced by contact with a particular chemical. That's where I think our competency comes in, in establishing or denying causation, or coming up with an opinion. Somewhat like the weatherman predicting fifty percent, eighty percent chance of whatever. And some of our problems come down to probability, statistic likelihoods, because of the complexity of many of these environmental problems, the long latent periods, with a lot of free variables in the interim that confuse the diagnostic picture.

Q: Well, in a way, you're in what amounts to a growth industry. People are concerned about the environment, and there's an active media out there, which sort of focuses on the problem of the week, practically--whether it's what we're drinking, what we're breathing, what we're using. Have you found that because this is something that's within the public's attention span on almost a daily basis, this is helpful for you for staffing, for all this, to show where the AFIP is with it?

DR. IREY: Well, the public is being made aware, and we are certainly aware, that at present throughout the United States there are thirty thousand hazardous waste dumpsites. And the EPA has chosen thirteen hundred of them as having priority in study. One of the reasons for this prioritization of this small group is the number of citizens that are in the vicinity. For instance, there are two million people within a mile radius of these thirteen hundred dumpsites. And either the watertable is being contaminated and their wells or rivers, their water source is being contaminated, or the air that they breathe. So this is an almost logarithmically increasing problem, in our eyes, and in the eyes of the public through the media. So that it's not a dead subject in any way; it's, if you will, a living subject and a growing subject, growing in magnitude. And the question raised by some people is: Are we fouling our nest to our own destruction?

For instance, right now, we have a visiting chemist for three months, from Bulgaria, under the aegis of the United States Department of Agriculture. And he is getting experience on our atomic absorption spectrophotometer, which is a state-of-the-art thing which I think we are the only laboratory in this area, or at least in the Walter Reed compound, to have. And now he'll go back and help analyze the problems that the industrialization of their country has produced.

Q: We're talking about Eastern Europe--Bulgaria, Rumania, Hungary, Czechoslovakia, Yugoslavia, and Poland, as well as Russia.

DR. IREY: Yes. We are gaining, you might say, contact, with this man, and, sort of like a pebble in a pool, there's a ripple effect. We hope to develop contacts, and perhaps, as we did in the Kuwait situation, on the ground, we can take part in a consultative way in the assessment of the danger of the industrial processes that these Eastern Bloc countries are suffering now.

Q: A major concern, because there was absolutely no environmental program in what was the Eastern Bloc of the Soviet Union.

DR. IREY: That pretty well puts it, because, yes, they, in a short time, telescoped the Industrial Revolution in a much shorter time and with little or no attention to these spinoffs in the way of environmental dangers. So that they are now inheriting the wind, in that sense. And I think his presence here indicates that they're at least planning to do something about it in the way of assessment. Which hopefully leads to control measures. You have to find out first what the problem is.

Q: In dealing with the AFIP, looking at it, you deal with submicroscopic organisms, and this is larger, but it's still an organism, the Institute. Did you find there were ebbs and flows of support and all from the various directors? Or can you think of any directors that stand out in your mind, that were, from your viewpoint, either more difficult to get along with or more enthusiastic about what you were dealing with? You started out with Joe Blumberg, and then there was Captain Bruce Smith, and then Colonel Ray Morrissey, and then Hansen, Cowart, Cowan, McMeekin, and Connell.

DR. IREY: Well, at that level, which is at the top of our pyramid, generally we've led separate lives. In the sense that they let us alone, and keep us warm in the winter and cool in the summer, and furnish us microscopes and resources, that, I think, makes for a good relationship, really. They're not generally interested in micromanagement of us, and I think generally they've kept in touch with our progress in a fashion that would permit shifts of emphasis or support where needed. I can't point out with any particular emphasis either way, naming any of those in that group that you just cited.

I remember Blumberg, as a person, was a little more apt to drop in just to chew the fat a little, without any inspectorial kind of a visit, but just sort of a friendly visit.

And the others have not been unfriendly, but Joe was a little more the kind that liked to sit around the cracker barrel and the stove, like in the country store. But generally they've been supportive.

Now right now we're interested in a project, the Environmental Registry, which is a broader thing than just my department. This would involve my department and the Veterinary and the Infectious Disease--any of our departments that have a foot in the door on environmental problems. And they're planning to be not an amalgamation in a formal sense, but in an operational, functional sense, gaining material from the civilian and military sector on both animal and the human, and subjecting that to computerization and so on, to the end that we might ultimately become a reference center here for those wishing to get information on various drugs and chemicals to sort of put together in a synthetic form what the picture is, findings in the animal, toxicity studies and so on. Sort of the equivalent of the National Library of Medicine, in an environmental, informational sense.

So that's one of the things that's getting some attention now in emphasis and cooperation from the front office.

Q: What about your relations with the medical community? Do you find that since '65, when you came in, that the role of the AFIP has, in a way, diminished as the role of some of the research universities staffs has increased? Or does this continue?

DR. IREY: Well, I can answer that not so much from the personal-experience point of view, because my contacts are not at that level. I know that the consultative function of the Institute has changed, in the sense that there is much more competent competition out there in the way of facilities and competencies at medical centers. The teaching function of the Institute has met competition, in a way, from many teaching seminars that are scattered over the country now in much greater numbers than they used to be. So that there is more competition, in that sense, in the teaching function. The consultative function has been somewhat diluted by the development of similar operations throughout the country. The third function of the Institute, the research. Again, I think our strength is in our capacity to collect large numbers of unique entities that even medical centers, not drawing on the broad geography that we draw on, are not able to compete with us in.

Q: What about recruitment? When you came in, there was still almost the Berry Plan, where you could sort of reach out and get almost any doctor you wanted for their military service. And then that ceased in the seventies. Have you seen a change in getting the type of people you want, to come in and serve for a time in your department?

DR. IREY: Well, that hasn't been too much of a problem, because we haven't been recruiting actively, really. I came in alone, a pathologist. And then Dr. Florabelle Mullich joined me, two pathologists. And then with our radiation man, the third pathologist, Dr. David Busch. So, considering our workload and our responsibilities, I think that sort of covers the waterfront. We're not receiving frequent prospective

employees professionally in the environmental and drug area. Not too many people are interested in that. But of course we haven't been able to, or interested in, expanding our staff much more than what it is now. As we grow, then we may have to enlarge our resources in that way.

Q: Well, sort of as a final question on this, doctor, looking back on your time so far at the AFIP, what has given you the greatest satisfaction? And have there been any sort of disappointments, something that you wish could have been done that wasn't done in this period?

DR. IREY: Well, it's said that a person needs three things: stability, stimulation, and peer recognition. Certainly it's been stimulating, from the point of view of a new subject. When I first came in and began to look at these cases, I had the question arise in my mind, Well, where do I find out how to make a judgment call on whether indeed the drug has caused this change? And I found out that I, in a sense, had to answer my own question. So it's been the answering of that question that's been a good deal of my efforts in what I've done in the way of both drug and environmental analysis and diagnosis. I've written four or five chapters in books, and two or three monographs on the diagnostic problems in these areas. And I'm preparing an algorithm and a paradigm now on the environmental analysis and diagnosis area. And I've had stability, I've been here this long. So, from my personal point of view, I've found it stimulating, and I hope I've made some contributions along the analytic and diagnostic lines, and continue to do so. So, out of one to ten, I guess it's nine plus.

Q: That's excellent. Anything that you wish you or your department could have tackled that you weren't able to?

DR. IREY: Oh, not really. Of course, we've been products of accidents. Why I got into pathology was an accident. Why I took this job was probably an accident. And why the cases came to us, not by design and not by cold calculation. So, like much of life, this has reflected that same randomness and chanciness. But withal there's a certain thread of, I hope, some reason to the whole thing.

Q: Well, doctor, on that note, which I think displays that there was reason behind everything, I want to thank you very much. I appreciate this.

DR. IREY: Well, thank you, sir.