

Hollis, Mark, First Director of CDC

Date of Interview June 24, 1985

Interview by Bill Watson and Bill Foege

Summary of Interview:

CDC HISTORY: Interview with CDC Director 1944-1946 Mark Hollis. DVD. Interviewed by William H. Foege, MD and William C. Watson, Jr. 1985; Atlanta, GA.

Dr. Mark Hollis first discussed his career before the MCWA. He explained that his father, a medical officer, groomed him for the Public Health Service. Hollis worked with doctors including Fred Simpson, Charles Williams, Kenneth Maxcy, and Nathan Brill on plague and typhus, Hugh Cumming on oyster transplantation, Adolph Rumreich on Rocky Mountain Fever, and Eugene Bishop on malaria. This led him towards tropical diseases and engineering.

Concerning MCWA's formation in Atlanta (1942), he talked about befriending Dr. Glenville Giddings from Coca Cola, getting trucks, unloading a warehouse, and mobilizing teams for dengue outbreaks. He praised aural and visual operations. He described Dr. Joseph Mountin's focus on states and backing up fieldwork with research, which was opposite the NIH method.

A disciple of Dr. Thomas Parran, Dr. Hollis became concerned about chronic disease and pollutants' effect on our environment. He praised Langmuir for epidemiology and the EIS, but wished similar work had been done on the environment.

Notable Quotations from Interview:

On the decision to base CDC in Atlanta: *"Of course, Surgeon General Parran made the final decision but Jimmy Thompson, the assistant surgeon general for research under that old title was very influential in it. Dr. Draper was deputy Surgeon General, he had a voice. Well, in all frankness I was a Georgian. Atlanta I knew. I used to tell Dr. Louis Williams, I said, "You're a Virginian although you were born in Texas, went to the University of Virginia," (and really thought of himself as a Virginian), "let this be the first time Georgia ever got anything over on Virginia," ... So I don't know how much influence I had but the decision was made for Atlanta and so—"*

Key Terms in Interview:

Chronic disease; pollutants in the environment; malaria; plague; typhus; tropical diseases; Rocky Mountain Spotted Fever; Public Health Service; MCWA; NIH; epidemiology; EIS program; transplant of oysters;

Key People Mentioned in Interview:

Bishop, Dr. _____
Bishop, Eugene
Bowen, Hugh D.
Brill, Nathan
Cumming, Hugh
Daggy, _____
Devowen, Hugh
Dyer, Gene
Foege, Bill
Furman, Bess
Giddings, Glenville
Kerr, Dr. John
Langmuir, Alex
Maxcy, Kenneth
Mountin, Dr. Joseph
Parran, Dr. Thomas
Rumwright, Adolph
Simpson, Fred
Watson, Bill
Williams, Charles

INTERVIEW:

Bill Watson: Today is June 24, 1985, a beautiful summer's day in Atlanta and Dr. Bill Foege and I am Bill Watson, have the pleasure today of interviewing Dr. Mark Hollis who was the Director of Malaria Control in War Areas (MCWA), CDC's predecessor organization from 1943 to 1946, and then was the first Director of CDC from 1946 to early 1947 and was around literally at the beginning, so we are looking forward to hearing your firsthand accounts of how CDC began; some of the thinking that went into it as well as the mood of the country and the public health service and government at that time. And perhaps a good way to start, Mark, would be for you to tell us a bit about your career before getting involved in MCWA and how the public health service was at that time.



Mark Hollis, Bill Watson, and Bill Foege 1985 History of CDC Interview

Well, Bill, thank you. First, it's great to be back after all these years. It's good to see what's evolved here in Atlanta from the extremely modest MCWA of '45 and '46 as it emerged. And I'm not speaking really of the physical plant, as impressive as this is, looking at it this morning, but of the great contributions this center has made to science, its outstanding, enviable reputation not only nationally but internationally. So it's great to be back.

I don't hardly know how to get into this background. I was born in the service as it were. My dad was a medical officer in the public health service so my whole life, I kind of grew up in the service. Really at an extremely early age I was determined I was going to be in the public health service. I felt that way and actually my dad kind of groomed me with the expectation and certainty really that I would take medicine and would kind of fulfill with ambition that I kept speaking of. That's a long story in itself. I mention that background because a few things come about. He went to China, incidentally, in 1909 and to 11. He was at the hospital. He did surgery at the hospital in Hong Kong, at the service hospital. That was in the days when we had hospitals overseas. But

during that tenure, he saw human plague and treated human plague—a background that fit. Later when he came back, he was stationed a short time in California, ran the hospital in Mobile, Alabama where we lived for a year or two and when the early outbreak in New Orleans [happened], a plague that came from the West Coast in 1914, he was immediately transferred to New Orleans for the service—it turned out to be a rather extensive operation in the control of the outbreak of the plague in the Gulf area of the U.S. I remember it because there were some real early giants that were service officers that were down there. Hugh Devowen was MOC, Fred Simpson, all of which have big names in the history of service. Charlie Williams was in charge of the plague laboratories at the time. I want to make one mention that toward the end of the plague epidemic there, the officers met at our home for dinner, and I remember this, I was about seven, almost eight years old, but I remember Dr. Hugh Devowen, a distinguished man, that they gave a toast to the book that they'd just put together that turned out to be Bulletin 87 that was kind of the early plague book on rats and the transmission. And they said, “You will go down, Hugh Devowen, and you will be remembered for having worked this material out for this bubonic plague for this Bulletin 87.”

And he said this, and I remember it and why I remember it, I don't know, but I remember he said, “I wish I was sure that what we are advocating on a plague epidemic, the mass poisoning of rats and mass methods of getting rid of rats was the correct procedure.” I remember that distinctly.

And as you know, years later on typhus when we were able to work out the behavior pattern, that was another one of my earlier assignments, but before that in Norfolk, Virginia in 1926 I was given a job by Dr. John Kerr for summer, I was finishing high school and trying what the service was trying to do to develop a method to “pasteurize” oysters. The reason being that certain—Hugh Cumming was a Virginian, a distinguished man, and he felt that sooner or later there were going to be problems of pollution and oysters particularly in the Chesapeake Bay and multimillion dollar oyster beds might be in jeopardy and he got an appropriation and set up on Craney Island, this little research center, and I was there with the title of Executive Assistant or some such, but I was the dishwasher and I made the media and I watched the autoclaves and I lived on the island and I watched the water and incubators at night. We never able to develop any pasteurization that worked but I lived on the island and watched the incubators at night and the water in the oyster takes and so forth. Never did, keep it short, we never were able to develop any method of pasteurization. It worked but it changed the physical characteristic of the oyster. Aesthetically, it turned out a horrible looking creature, kind of a pale white and certainly no one would eat it. But in the process, we threw a little accident on weekend problems. We began to move some oysters that came in late Friday and we didn't have time to do anything with them. We moved them over to a little estuary in the lower Chesapeake Bay coming down Willoughby Spit in a little channeled-in estuary and we'd keep them there overnight or for a few days and then re-harvest them. We discovered that these oysters were cleaning up themselves. If you left them there a week or 10 days or two weeks, we'd go get them out, we'd harvest them and they were pretty much freed. And that was the beginning of the transplant of oysters, the moving from contaminated waters to clean waters. So while we failed on the pasteurization, we set the stage for the method that's used today to move the oysters from polluted waters into clean waters and they cleanse themselves of living organisms, of bacteria and germs. But of course now we've got the problem of toxicity.

Anyway that was the background, and Hugh Cumming, certainly Hugh Cumming was vacationing down there. I got to know him. So it turned out that I have met five—served under five surgeon generals and you six, in my lifetime. At any rate, it changed my whole concept of what I wanted to do. I was having a lot of trouble with high school Latin. And I wasn't learning very much on foreign languages, but I loved mathematics and science and physics and even chemistry. So I went back to my dad. At that time Dr. John Kerr who was a real giant in the history. He was the one that took Wyman's 1908 memorandum, and if you wish, we can get into that later on. But he was in charge of all the public health service activities in the Norfolk area, including the quarantine activities over at Fortress Monroe, and we were stationed over there at the time, my dad was, on the old Chase, the training ship, Chase, left on the Chase. So I had to go to him and tell him I wasn't going to take medicine, I was going to take engineering, and come in with that side of health. And he was quite distressed. I remember he turned to Dr. Kerr and he said, "John, did you hear that? That's the most stupid decision I think I ever grew a son up to make."

But I talked to him seriously and he said, "If this is what you want to do, you do it." So that's what I did.

So it was with that background I had my first assignment. Well, first I went in the Army because I was cadet colonel over here at the Cadet Corps and that gave me the privilege on the Thompson Act I was stationed at Oglethorpe on the back of a horse in the cavalry, and I began to wonder if we ever do have a problem, we're not going to fight it with saviors over the front end of that horse. So I went on inactive duty and met Dr. Rumwright who at that time was working at the NIH with Gene Dyer, Daggy and Rumwright on what they thought was Eastern rocky mountain fever. It was the outbreak in Savanna they were working on and he put me down as a rat trapper, enlisted rat trapper. They were trapping with cage traps. I'm going to tie back to the New Orleans situation here because it's an interesting transition of how things happened approaching disease problems.

People were using in Savanna, the old methods of the New Orleans, Galveston, the Chiapas survey that was made by Fred Simpson later on after New Orleans, and when he set the levels of infection of these particular fleas, the transmitters of plague, they were using cage traps and incidentally a man could only handle even at best because you were walking around routes, you could only handle about six or eight of those cage traps and we weren't getting enough rodents to really make any statistical impression. Well, from my background down at on trapping coons in the early days, the rats follow routes and runs much like coons do, and I used to trap with steel traps with new bait to set them in the runs, so I said, let's try that. So we got traps, a man could take 50 easier than he could take eight of these big cage traps on his back and could set them and then we'd speeded up and got a lot more routes and so forth. But what did we find out? We found out that the old Fred Simpson concept that you'd have for the whole area of the Gulf Coast, he found about 2.8 Chiapas fasciitis per rat. We were finding in the area of 30, 32, 36, 28 and so forth. Why? Well, we began to look into that and that was the first indication—to get into some of the background—but these particular fleas live off the host a good bit of the time plotted against temperature and humidity to a lesser extent. Well, about that time we had the big epidemic or outbreak in Alabama in Dothan. Kenneth Maxcy, as you know, old Dr. Brill was the first to point out this peculiar disease. He called it Brill disease, or it got to be known as Brill disease. Kenneth Maxcy had done some outstanding epidemiological research on that in Alabama and I had a

chance to meet with him. He was back visiting in Alabama. In the meantime he had gone out to the medical school at the University of Minnesota. I had a delightful period with him and he outlined all he knew, I told him what we found out in Savanna. He, in the meantime, I left out the point without getting into it but they, Rumwright, had emulsified all parasites and had found out that it was a parasite on the rat and then it wasn't long before we could back it up to Chiapas fasciitis. And so with that background we worked on the work and developed the curves on temperature behavior pattern of the Chiapas. That was another background. And during that course, I was sent up to—TVA was moving ahead in a malaria program. Dr. Bishop is another well-known malariologist, was the medical officer in charge of that whole program at TVA. So I had an assignment with him, all that by way of saying that we were so short of officers with any background in tropical diseases and tropical infections that I immediately was trying to earmark to get into that field. So I worked with Louie in the earlier stages. We felt we ought to get out of Washington, that there was going to be too much congestion, too much problems there, let's move out. We considered three states for the—

Was this after the war started?

Oh yes, it was I guess a month after Pearl Harbor or longer. I've forgotten the exact date. Well, no I do remember. It was in April so it was several months after Pearl Harbor episode that we finally decided on Atlanta. The reasons and justifications that favored Atlanta over the others was the portico area headquarters was here, rail to air hub, access to Washington was quite good and we knew we were going to have to maintain that. So Atlanta was chosen and we were sent down.

What were the other two sites under consideration?

One was in Texas with the support of Charlie Williams. The other one was in California because of the proximity moving into the Pacific Theater, to what extent would the MCWA get actually involved in the war theaters was uncertain at that time. So we really concentrated, let's set MCWA for the U.S. pattern recognizing we're going to have to probably be pulled into the other.

Who made the decision that this would be in Atlanta?

Of course, Surgeon General Parran made the final decision but Jimmy Thompson, the assistant surgeon general for research under that old title was very influential in it. Dr. Draper was deputy Surgeon General, he had a voice. Well, in all frankness I was a Georgian. Atlanta I knew. I used to tell Dr. Louis Williams, I said, "You're a Virginian although you were born in Texas, went to the University of Virginia," (and really thought of himself as a Virginian), "let this be the first time Georgia ever got anything over on Virginia." So I don't know how much influence I had but the decision was made for Atlanta and so—

We still think it was a good decision.

It was a very good decision.

This was in April of 1944.

'42. April of '42. I had been detailed from the service—well, first after Dothan, Alabama I was sent to Washington to NIH. NIH at that time was in the old Navy Hospital at 23rd and E on the hill. Dr. McCoy was director, and incidentally an interesting point, while there Dr. McCoy had a tea and invited the staff down into his office to celebrate the fact that NIH for the first time in its history had exceeded one million dollar appropriation—one million and sixty thousand dollars to be precise. So he served tea and he wanted to have a toast. And it was tea incidentally that we had. So I had served there for a year and the Rockefeller Foundation. In the meantime the Rockefeller Foundation had been interested in the southern states, they had a major program underway. Dr. Pratt Covington was a Rockefeller medical officer and tried—and got to one point where in Savannah when we were working on this murine typhus problem, he was instrumental in getting me up to Bishop. He said, “I think you ought to go up and take a look at some of what Bishop is doing in malaria, so as a side you might help a little bit on that.”

So he came in to the surgeon general and—Dr. Hugh Cumming was still surgeon general—and he talked with Dr. Thompson and he said, “You know, I think the service ought to begin to think of detaching officers—detaching people, to the states, and we’ve got a situation that needs some help. In North Dakota they’ve got a health officer and a statistician and a nurse and they’ve got problems out there, major problems, it’s growing and we’ve got several big industries coming in. The slaughter houses were moving in. They were beginning to put out powdered milks and evaporated buttermilk, and raising turkeys was a major economic problem in North Dakota. And he said, we ought to try to set up some sort of an environmental structure and why don’t you let us have that young Hollis man to go out. So I was dispatched. Kept on service and service assignments by given the responsibility for the Indian reservations in North Dakota. That was my service contract back to the regional office in Chicago. So that was essentially my background before MCWA.

When MCWA was started in early 1942, you were a part of that?

Yes, I was the first one down. Picked out the space down there because Dr. Williams had an assignment in Washington. He said, “You work out the space on the Peachtree area, the building we were in before you built this.”

And in the early days I met a doctor, a practicing physician here, Dr. Glen Giddings. I don’t know whether that name rings a bell. He was a very wonderful man and personality but a very highly respected physician—Emory connected—spent a lot of his time on the faculty. He was the son-in-law of Mr. Arkwright who was the chairman of the board of Georgia Power and he lived out on Druid Hills in the Arkwright home. We lived out in that area about a mile from his home and I got to know him very well. He was, of course, much older than I was but we had a very delightful association. He was the one incidentally, that Dr. Giddings initially got interested in Emory and Emory became an interest in the future, of what we might ultimately do. Of course, at that time it was war effort. Dr. Giddings was a medical advisor to Coca-Cola. So he was a highly respected man. I think his son took medicine and may be practicing medicine in Atlanta, I don’t know. I didn’t know his son too well.

But that was the beginning of the CDC Emory time.

Well, you know, it's hard to say. If you ask when was the initial idea of a future or a conversion of MCWA, I don't know hardly how to put it. Dr. Parran was prone to travel a good bit into the Caribbean areas and into the Pacific Hawaiian and quite often I went along to carry his briefcase, as it were. He'd swing by and pick me up here. As I say, I was a devoted disciple of Parran. I thought he was one of the really great medical health men of the world. His vision was so broad and the fact that I had the privilege of traveling with him a bit and talking with him, and we talked about the future of things. This was before the split atom but we knew in a very vague sort of way about the manner of the project, the concept of the inner workings. But when that broke...in the meantime we talked a good bit about my deep interest in the synthesized molecule. I said, "You know, the potentials of this, Dr. Parran, are fantastic." I said, "I made a trip up to Cincinnati and talked with Clarence Rukoff." Clarence Rukoff was the organic chemist of the service. A fantastic man and he was in that early group. A real interesting story about that station and Dr. Kerr but it really has nothing to do with CDC.

But I went up and talked with him about what we foresaw in this, what would be the problems likely to come because you could see the growth of synthetic materials coming out—the war spawned needs. We, for example, at service got the task of doing the sanitation on liberty ships. I had a hand in that and there's no point if you're thinking of ships that the life of them would be roughly less than three trips before they would be destroyed; no need of wasting critical materials, let's go into synthetics. And all the piping on there—this was the beginning of plastic pipes, for example, the buildup and use of plastic pipes in ships. So we discussed some of these things with Dr. Parran and I told him, I said, "You know, Dr. Wyman in 1908, Dr. Parran, Dr. Kerr gave me a copy of that memo and gave it to me in 1926," and Dr. Kerr made such a deep impression, too, in his work and he told me about his visit with Dr. Simeon Wyman in 1908. That was the year I was born.

He said, "Wyman called me in and said I'm convinced"—"and in the memorandum he repeated this"—"I'm convinced that cities are going to grow, industry is going to expand and there will be all sorts of pollutants that's going to degradate the environment. Some of them will have major health significance, will have disease potentials, and the service had better begin to think about it." At that stage you were not too deep into domestic health, you were still in the old public health service division. The name was still Marine Hospital and Public Health Service at that time, or Public Health and Marine Hospital Service. That was the act of 1902. But still he was beginning to think—Wyman was a rather deep thinker in the future of the service getting away from the old traditions, a transition type of service. And he commissioned Dr. Kerr to go out and find a station and set it up and there's a story in that which I won't get into but finally he wound up at the Marine Hospital in Savannah, the old Kilgoure Building and that became the stream sanitation and Rukoff was stationed there and I was assigned there and worked out of there in my assignment with the army engineers on these empowerments when I was in Oklahoma on the Canton empowerment designing them. So that background was in the picture and I tell Dr. Parran, "You know if Rukoff is right and when this all gets over, the war has spawned all sorts of things." They'd learned how to miniaturize circuitry in airplanes, so the old computers—you used to think of a computer as twelve feet wide and very complex, that if we could miniaturize this and get it down to where it could be a pod, the vistas just bloomed. I said, do you ever think about what the world is going to look like after World War II? And he said, I've thought about it a great deal. And I think he said

on the other side of it chronic diseases, heart problems, cardiac, mental, these chronic problems are going to take over and we've got to think of NIH as maybe just in it.

Well, all that came into discussion during the—toward the end of the war. So back during the transition, as I say, the states felt that they needed federal support when these troops come back because they weren't sure what they'd bring. There was a deep feeling in Parran's part less than the others that you ought to study these newer emerging diseases, particularly tropical infections and have someone concentrating on that. But fundamentally there was a recognized need, a real basic recognized need that the service now was getting into domestic sort of health, a need for a center that would devote its full energies to invest field investigations because you had the NIH under the Act of 1912 the service name had been changed to Public Health Service. NIH had evolved from the 1884 Hygienic Laboratory up in New England, incidentally it migrated to New York and had come to Washington and in 1930 it had changed its name to the National Institute of Health. But its fundamental function, its mission was medical basic research and likely would continue as such. It would do and did do field investigations and would continue to do it as needed to back up the bench. But here the need was for a field oriented center, a center that would concentrate on field problems. It would do basic research, yes, but to the extent we had to back up field. That would be the fundamental difference between the two institutions. And that leaked out and there was a lot of reaction from some of the researchers that NIH would call a contradiction and different problems with the basic research and they didn't like it. For the record, I'd like to say that Dr. Dyer, he didn't say much at first but once it got under way, Gene Dyer supported it.

He was the director of NIH.

He was director of NIH at the time, fully; not only in service with his own staff and the surgeon general's staff but more importantly in his discussions on the Hill. So this was some of the background on it. The name that has to come out if you're going to get into the CDC is Joe Mountin. Dr. Joseph Mountin was a real giant in the transition and getting the public health service into domestic health problems of states. His vision in this area was fantastic. An interesting man because he cared not one iota about his own reputation or what they thought about the Mountin views. He pressed ahead very strongly in the field and if one had to select "a" man that was the fundamental strength behind the transition, it would be Joe Mountin. Of course, Dr. Kerr had agreed and approved but Joe did the basic—I remember I used to tell him, now I can get up to Senator Kerr, I can get to Senator George and explain to him, he's on the appropriation committee. You see, we didn't need a congressional act. The service had the fundamental authority to set up CDC but what you needed to be sure of is that you had the approval of your proper congressional groups. The committee and the senate and house that would consider in a legislation of the public health service would come before them but be sure they agreed, but more importantly that the appropriation committees would agree. There was a little background there that comes into play because I don't know whether either of you knew Trawick Stubbs and David Rue. They were young medical officers attached to MCWA at the beginning. Both were highly competent artists. A third one was Bill Boyd who incidentally is practicing medicine in Augusta, had a hospital/clinic I understand over there. I'm not surprised, he's a brilliant man. At the university when I was in engineering, he was taking landscape architecture, finished that and then

went into medicine. But he was highly skilled as an artist and sketches. In later years he had two pages in *Life Magazine*. I have a copy of those when *Life* was still in print, when they were giving the painting honoring the practicing medical profession that had gone into artist work, paintings as a diversion, as a relaxation and so forth. He had two pages in there, five pictures. But they were getting into early stages of audio/video operation and in all frankness I would have to say I didn't have much interest in it, I didn't see how it fit into the war effort, but they were so persuasive. Bill Boyd I kind of leaned on as an old colleague for advice particularly in the medical area and I chatted with him one day and asked him, "What would you do about Dr. Trawick [Stubbs] and Dave Rue, who are so convinced that this has a place, how to argue about it?"

He said, "Well, you're only talking about a few colored pencils and some paper and a little office and they'll carry on their normal work anyway, why don't you see what happens." And that was fantastic what happened. They developed a group of people there that produced movies, developing some major drainage problems by explosives. Worked out with the chemical corps, they were testing out some new explosives. So working with them I got them to test them out, blowing out these—opening these ditches for us. They got pictures of all this and movies and developed when DDT comes into the pictures we can't talk about CDC without bringing in DDT. When the Murine typhus program broke and we got the orders out of the pentagon about DDT, they had pictures of the jeeps going before the senate and house appropriation committees. I took some of these pictures. George Tarver of Georgia was in charge, was chairman of the subcommittee hearing these appropriations. Delightful gentleman. He'd been a judge for years and he was impressed and asked a lot of questions about it, how this works and so forth. I often have said, and told Dave later on, I thought the contribution that those two officers made in pushing this ahead with no real support meant a great deal to MCWA and getting its appropriation and that the point of transition. We had no really opposition in Congress, it was the smoothest transition I ever experienced before a congressional committee. They bought the concept of the returning troops and that concern, and they agreed with Parran on watching this, look into the increased speed of transport of passenger transport to develop means of offsetting some of these influences and questions that would come. We had a little more in-service from NIH until Gene Dyer took the position he did. Of course, that quieted that down.

One more interesting point on the transition of NIH, we probably won't get into here, but back on the MCWA, I'm not sure of this date but it must have been '43. Dr. Kerr called me one day and said, "I just left a meeting in the Pentagon. I have an appointment on the Hill before a committee. I have no time for any discussion but we are under orders—I've accepted the responsibility of controlling typhus fever at all air fields in the United States training flyers. So I'm turning this over to you, we're going to move Eske's operation over into MCWA and you handle it."

At that kind of tone you say, "Yes, sir!" and that's all. But in the meantime we had gotten DDT. DDT had come in the picture. Louie Williams foresaw the great advantages of DDT. He envisioned even that we could go up into Canada and put DDT in the young birds that were going to migrate and as they grew up, they would stop at the lake. Well, that seemed a little far fetched but he pressed that, and I mention it only because it's in a paper, a formal document before the National Malaria Society when I was president that year and Louie put this on the record, so it's recorded. But we didn't really dabble in that; didn't have to because the impact of DDT was

fantastic. And having remembered back with Dr. Kern gave us this order on typhus, what we learned in Dothan about the behavior of Chiapas fasciitis transmitters, why fool with the rat? Eske was running a rat-proof program. He couldn't get appropriations, he couldn't get the scarce materials to do much about it. He was not too well at that time. So when he came over, I said, "We're gonna forget the rat, let's just concentrate with our orders to stop typhus."

For some reason—of course, typhus has a mortality of probably 2% or less, but a person infected, particularly if he's a flyer, that has some impact on him that it marks his training out pretty much for a matter of months and particularly susceptible with the Canadian boys, the British people coming in the training around these—and develop these foci in a few cases were cropping up and they were concerned. It was so fantastic that putting out—we put, as I recall, about 300 jeeps, equipped them, moved them out, two men only because manpower was an issue of course. Two men per jeep, put them out around these fields, concentrated only on the rat runs, DDT, pay no attention to the rat, and you could just see the disappearance of typhus in those areas. It was a fantastic outcome. That should have inserted one other reason for the transition to MCWA was that—and this impressed members of congress. "We've got the machine built, we got the staff, we've got the equipment, let's give malaria and typhus a knockout blow. Let's really once see if we cannot eradicate a disease or two diseases in the United States."

So that was another justification and as a matter of fact, during my tenure we were concentrating on that. Now, maybe this is a good time to bring in—everything was euphoria. Some of us kind of coexisted with something a little bit short of true brotherly love like my arguments with my good colleague Langmuir whom I respect as an epidemiologist, really world renown. But Alex had little patience, no patience with the impacts of non-infectious environments. I had envisioned even in '46 here in '46. By then, the split atom, as I say, the uncertainties of the future of the split atom, the euphoria that this would perhaps the end of energy shortages, that would be the utopia of energy for the world. That picture, the peace time uses and other respects were handed about, but there was still a deep concern in many minds about not being certain of these radiation impacts and stresses that would come with it. That was unknown. And with it, as I said before, the concerns now with the synthesized molecule, you could project this and see all sorts of vistas coming before you in terms of how this would impinge on things that we would eat and that we would wear and that we would use that would move in fantastically, which of course it has. So my concern initially when I first came in and I discussed it with Dr. Parran that the world is going to be different and one of the differences is going to be the impact on environmental toxicities. Now Hayes was here at that time and Dr. Hayes—I've forgotten just when he came on the scene.

Wayland Hayes?

Wayland Hayes. But he was, again, another delightful man and with great competence. And I used to discuss this problem with him, and I had envisioned, I had planned to set up what I was going to call at that time in environmental intelligence mechanism at CDC and it was going to have a decided priority impact and it was going to take a look at all of these change in impacts in terms of the shift now from microbiology—not the shift, the broadening of microbiology into micro chemistry and from acute to chronic, just as Parran envisioned it at NIH, that there would be these chronic problems environmental related. Rukoff had said looking at the Kenowa river basin which

was spawned by war need for synthetics, that the Ohio River is going to receive the byproduct waste and these are organics, they are all petro-chemically oriented based, they are toxic of varying degrees and they're going to behave pretty much like inorganics, and this was going to be—could be real issues. At that time you measured them in trace. But he said when these get down to being measured in parts per billion maybe, and ultimately in parts per million and those concentrations, you're going to have a problem.

So I wanted to really press this. As I said, Parran agreed, “You go ahead, you got two years.” But I didn't have two years. He wanted to move ahead with NIH sooner, so I got moved out. But I've come back, and Vonderlehr had no interest—none at all.

And as I say, a good colleague, Langmuir, whom I would like to say on the record that there is just no way to pick a good value on what Langmuir did in the field of medical epidemiology far beyond what would show on the surface. Now, he set up this training mechanism here. We had so many young medical officers coming out and coming down, many of them served medical commitment under Langmuir. History shows how well he developed that core of epidemiologists. These I met many of them out in medical schools, one of them in Lakeland, Brent Moore who I mentioned earlier. I talked to Brent the other day; I've got a bad knee and I had to go in and take a look at it, and I told him I was coming up and he—busy as he was, I had to tell him, I said, “You've got patients sitting out there.”

“Well, I'm gonna take another minute”. He said—and I agree with him—he said, “It's fantastic the Langmuir influence and how it has permeated into medical schools and into medical practices. People that would not have thought that deeply about epidemiology.”

So I say, and I still say today, and I saw Langmuir after his marriage; you know, he had moved back up East and married Baumgartner who is a delightful colleague and I had a chance to meet with them and I said, “Alex, now that the heat is off and we've had our little spats and I'm sure you're confident you were right, and I'm sure I'm confident I was right, so that will never be settled, but I said envision if you will what this country would look like if CDC had—if you had broadened out and got—if you didn't want to waste your own time with it, if you thought it was a waste of time, put a small nucleus of good medical people on this environmental issue, look at it; that what might have been in this country if CDC had done in that field what they've done in infections, we'd be spared much of this mess that we're in on the environment, these uncertainties, these discussions of threshold levels with more emotionalism and extremisms than reality. No good scientific backup states making decisions on legalisms rather than on basic medicine. And I said, there's deep-seated medical views here which I still think ought to receive attention. You've got what I call ‘stress-induced phenomena's’ coming on. The aggravation is now congestion, noise, tension, monotony, drug abuse, accidents; all these mental frustrations that you see. And one wonders, we think of man with his great resilience, a human organism with its resilience and adapted capacity that it can mold itself to these things and perhaps it can because people seemed to be, and I stress the word “seemed” to be living in fair health in these heavy congested areas, but I wonder—I ask the question, I'm going to ask it this afternoon in the meeting that, “Is this a real or a pseudo adaptation? Are we at a point in the congestion where you begin to note some characteristic changes like NIH has done on behavior of rats when you confine them with their

population in an environment that's suited for 40 rats and you develop 400 rats and see the behavior changes.”

I spent a little time in Japan after the war and took a look at the congestion. I don't have the background, and I don't want to comment because I'm not competent to comment on it, but I think one could really, if you took a look at that from a deep-seated medical viewpoint, see some characteristics forming that might be worth our taking a look unless we really believe that our population will balance off and get back to a more stable and less congested situation.

I have two questions. The first one, how did Alex respond, and number two, I'd like to go back to the early malaria days again.

Well, Alex said this one day down here. He said, “You know, you talk about air pollution,” and he looked out the window and he says, “You mean if you're talking about confined areas, if you're talking about industrial hygiene, I'll buy it, you convinced me. But if you're talking about this outside ocean and air out here with man's little pittance interference, I don't buy that.” He said, “I'll tell you, I've looked back 20 years”—I say this because it was in a staff meeting at CDC about '52 or '53. We'd had Dinora, we'd had some of these others, we had a look at the Los Angeles inversion picture and so forth. Well, those were freaks in his opinion. But he said, “I looked back 20 years and I find nothing really statistically even that would tend to make you feel in this you had a problem. And I said, “Alex, I'm not talking about 20—I would agree with you because I would respect your judgment on that but I ask you to look ahead 30 years, look ahead to 1980, for example, and let's see and project what the trends we've got.” I said, “I can project some of them for you. Now, we may be off but we can give you some statistics on that and then you think as a medical mind what and where in this curve might there be a problem, and then what I'm talking about is what I term projected epidemiology. I'm not interested in your background in epidemiology.”

But as I say, we agreed to disagree on that and CDC didn't pick it up. We tried to do it without CDC in Savannah, I mean in Cincinnati in that setting but we were without good medical, deep medical thought. As I said, back on this when we were talking kind of postmortem on it, that these things belong under good broad, guides deep-seated medical work and observation and checks, such as you got at CDC and it doesn't belong out where it is in the outlying shadows of



Caduceus. Picture retrieved from <http://en.wikipedia.org/wiki/Caduceus>

the Caduceus and it's not gonna work out there because there's not the basic competence that it's gonna need to put it over. And I hold that that's exactly what's happened and I even hold at

the risk of really being out on a limb, that the shift of influence of the public health in this country spins at a national level and into the states because public health leadership did not move into these environmental issues and had the fight up there in the late '50s when it was Dingle, Congressman Dingle, when Congressman Blacknick of Minnesota said to Lee Burney pointedly, "It's a matter of record in the hearing that unless you medical people can broaden out and look at these polluttional problems, we're going to put this somewhere where it will be looked at."

To me, with a man of Blacknick's strength in the House, backed pretty much by Kerr, Senator Kerr in the Senate; I talked to Senator Kerr about it and I told him, "I think the problem is that we've got to split the concern, I believe, of the medical people—of the public health people, state health officers for example, and the service perhaps. The environmental issues are so broad, so terribly broad, that if you aren't careful you would wind up with that environmental tail wagging the dog. And I accept that, but what we need to do is break it up just as we finally broke out the atomic problem when the atomic energy commission was judge and jury shooting off all those firecrackers out west."

And we said, "There's problems here and all you can get are the atomic energy commission there watching it, but you've got sheep dying out there and veterinarians tell us it's a radiation-related problem." And it wasn't until that split up—that's probably another story, doesn't have anything to do with CDC but until the service had split out and got agreement to build its own health physics group and its own rad health structure, and that was split so that you had a group that were really looking at the impacts with no responsibility for the actions so you can balance the two, and it was on that basis that I thought maybe we ought to split this up. That the public health service perhaps should not have been in the multi-billion dollar sewage treatment subsidy program.

Matter of fact, I testified against it, Dr. Kerr, I thought that this was an unneeded. We ought to put the utilities on a service paying basis, but this environmental issue went by the board and then state by state—and I don't know over a handful of states today where the state health officer has any sort of a public health preventive program. And if you look at the emphasis, it's back down pretty much on curative medicine and tied in with how do you handle the indigent medical cares and social problems, which are obviously important, but I still raise the issue that such things as the rad health program belong at CDC and not where I put it, but we couldn't get any action down here so we set it up under my own bureau structure up there and got Jim Carroll, we got two medical authors, Sam England and I forgot the other one, and a small group of engineers, we gave them advanced training, we got them all at the doctorate level in health physics as well as engineers, and I think did a fantastic job.

The history of that program is just out. Jim Taylor wrote it. I can say this; engineers are lousy writers and I suffer the same affliction so I can say that Jim wrote a lousy history in terms of the history but the facts are there if you'll ignore the split infinitives and so forth, and I would hope that CDC might look at it. And it wasn't until I found out really, to end that part of it, that CDC now—

Well, first the name, I want to go back to the name because there was a lot of debate on a name, what were you going to call this center? Gene Dyer only raised one fundamental issue which torpedoed my thought. Whatever it is, let's call it an American Institute to deviate from the National Institute of something. I thought that "institute" carried, I thought, a connotation. Gene Dyer

objected and I think he was right. He said that we should have no word “institute” in it because in the first place you were gonna get contradictions and get confusion, it will have a negative effect on budgets both ways. So he fought that and as I said, I think he was right.

The word institute.

The word institute. We wanted it eliminated. So then we had all sorts of ideas and concepts. As I say, I sat up nights trying to figure out how I could get that environmental word in there, stuck in there somewhere, crossways, but I couldn't think how to do it. Joe Mountin finally made this observation that actually we are defending this on infections and concerns about what might come back, back in other states, looking at complex problems, field investigations. So why don't we get the words communicable diseases, that's what we're really focusing on the moment, recognizing—and this I want to put emphasis on because of his vision—recognizing that this system on a whole, if we are successful, if we really put this over, this name will have to be changed. But let's let some of our younger minds at that time figure out what they're going to do with it. Gene Dyer backed it, Parran agreed, and Dr. Draper, who didn't say too much normally in this sort of thing, he was more the administrator for Parran as a deputy surgeon general, but he kind of spoke out on it. Thompson, too, also supported it. So really there wasn't much concern. We settled on it, all of us wondering what later on would happen when we had to begin to perhaps think of a broader title. I don't know how it came about but there was a good one I thought. And then you change it to centers which as NIH evolved in '48 to Centers—to Institutes rather, National Institutes of Health, and then I heard really when it was coming up here that you had set up a center for environmental health, and I thought, “Oh goodness, it's late, got a lot of catching up to do, got a lot of deep-seated problems, the legal profession deep into this now, but maybe it's all right, maybe now we can split this off.”

I think most states—I know in Florida and was on the governor's environmental commission. He had five attorneys and myself and I used to take a plate with the Shakespearean comment, “The first thing you do is kill the lawyers,” and put that on my desk. The odds against me. But I think Florida was convinced, I know the government was and I talked to Governor Glenn not too long ago because he was concerned about radiation, at least low level radiation and housing. And I told Governor Glenn that time, I said, “Governor, if the Centers for Disease Control had been in this picture and the rad health structure emerged in the U.S. had been under CDC, you wouldn't have this problem.” I don't know how they would have done it but they would have had the foresight and the imagination and manpower to have gotten into it and resolved it and you would have much better advice on the extent of this impact, if in fact there be an impact by these daughter products or radon coming off of the land that had been harvested for phosphates and we use now for building homes.

I think you'd be pleased with how many of your other ideas have now been incorporated into the CDC agenda not only environmental health and toxicology but the chronic diseases in the area of injury control so that you're right, it's a few decades later than it should have been but some of these things are coming back

into a public health sphere. My other question had to do with 1942, going back to the beginning of the malaria program. I would like to know something about how long did it take to gear up, where did you get the people because now you're competing with the war industry? What did it cost, those sorts of things.

It was tough going. One of the early—as a matter of fact if you look in Furman's history, Bess Furman kind of got the facts messed up a bit but—not messed up but confused a little bit, but essentially the first week or two down here, I had to go back to Washington, the courier with the contracts, we were still under the rather restricted matter of getting contracts signed for space and all that. So I thought, well, to save time I'll take them up there and walk them through because we've got to move fast here. So I was back in Washington and was out at the Naval Air Station for lunch with a small group and in the back of me I overheard a conversation and they were talking about Camp Glenn in Florida, and this man said that he was in the service, he said, "You know, I was on the Camp Glenn project and we just got in 200 trucks, half ton trucks on a lease purchase agreement from the government and we paid 50% of it and now we've paid close to 60% of it but we're going to close off that part of the Camp Glenn program because of the war situation here; somebody's gonna get a lot of trucks or else they're gonna be turned back."

So I got to thinking about that going back, how are we going to get enough vehicles to move as fast as we're gonna have to move. So Louie said that—actually I called him on the phone and told him about this conversation and told him that I was going to see Dr. Mountin and see what I could work out. He said, "Go ahead, do all you can."

Because I recorded Louie Williams in, I was his deputy, the new MCWA. So I called Dr. Mountin and talked to him in his office and he said, I've got to see Dr. Parran, so come on let's tell him about this. Well, Dr. Parran wanted to go through the war department to find out and I told him, I said, you know, "Sometime Dr. Parran you can run down there and do more on the site than you can do trying to get the paperwork through to get some consideration up here; somebody else may say why are we going to let this whatever they call this thing down there in Atlanta, these trucks? I'm gonna keep them over here."

So I said, "Why don't we try it the other way first?"

He said, "Well you go ahead."

And I said, "What authority do I have, how many if I can get...?"

Joe Mountin said, "Try to get two dozen."

Well, Parran said, "Get as many as you can."

I said, "I've got authority to buy as many as I can."

So I took a plane down, went in to see Dave Lee who is state engineer in Florida and I asked him who he knew out there. He said, "Well, I know an engineer out there who went to Georgia Tech about the time you were at Georgia. Why don't we go see him?" He was going to leave and go in service, he was called up, he was in the Reserves. So we got to exchanging views about Georgia Tech and Georgia, "do you know...?" and reminding him we loved each other, all this, and now there's a case where we ought to combine the two schools and do something for the country. So he said, "Well, we've got 250, some of them are shot but I'll tell you what I'll do. I'll run through this lot and put an "X" on the ones you don't take and you go through and take the ones with no "Xs". "

I said, "Who do I have to see?"

He said, well, he told me it was a civilian incidentally over here, the contractor, but he said, "He's under orders to turn them over to a government agency that has the authority now, want to close this out this week and he wants to get these out of here, he's got other things he wants to do."

I'm kind of making a long story of this but it's interesting because we went out and true to form, a good colleague, had put the Xs on the ones we didn't take and so in the meantime I told Dave, "We've got to move fast! I don't have any way to move these trucks and the commitment is to get them off of the government site today."

This was in the morning hours, so he called the—Florida has a police station right there in Jacksonville, the state troopers, highway troopers, and somehow they got eight troopers and they came out, each in his own car, and they were under orders to help us move them. I said, "Well, we haven't got anybody to drive them yet, what do we do about that?"

He said, "If you want me to we can get off duty troopers, a lot of them, if you want them."

I said, "Get all you can get, we'll pay them."

So we had a parade. The state troopers gave us the right of way and we moved 123 trucks there and bought them all that didn't have an "X" on them. Went back—I wondered what was gonna happen, so I went back to Washington and told that to Mountin. He said, "You didn't buy that many trucks, how are you going to pay for them?"

I said, "Sir, Dr. Parran said 'get all you can get, now that's an order.' He's got two stars, I've got—at that time two bars. I got what we could get, 123." But it saved us. We had that.

To the staff it was a real problem. At first, we got the sanitary—Colonel Hardenburg, had been activated and he was director of the Sanitary Corp. So he arranged first emergencies around some of the bases where they had to have quick action to assign us some of the Sanitary Corp people.

The army.

From the army. Had a little question of how would we direct them between the two services but it turned out we didn't have any problems. And we moved them as fast as we could. We were very fortunate in getting the U.S. Department of Agriculture has a Entomology Plant Quarantine Bureau Division and they let us have three people headed by George Bradley who was one of the top entomologists and in the meantime between George and myself we enticed Freeborn to get leave and we gave him a lieutenant colonelcy. In the meantime we put Bradley on as a major grade so we had a gold leaf and a silver leaf. As the officers, Mountin arranged for some officers coming, got Stubbs and we got Rue and we got a few of the—about four or five medical officers pretty fast. Louie had some contacts through Bishop and others. So we began to assemble the staff getting the field together, getting enough people in the field. Now, these by and large were civil service people under the direction of the Reserve Officer that we put in the Reserve Corps.

As I say, it was tough going getting the—another thing, we had to have all sorts of tools and shovels and what-not, so we went to—I had a good colleague in Washington that was with WPA that I knew when I was on detach service in North Dakota and he, in the meantime, had come into Washington winding up WPA and getting rid of all the equipment. So I got him on the phone, went up there, he said, “You know, we've got warehouses all over the country and we'd like to unload them.”

Of course, the service wanted to get a list, but I said, “They're not gonna buy that now, Dr. Mountin, and you've got to clear the way with the administrators down there. Give me permission to take the whole warehouse, that's what we've got to do—it's the only way we're gonna get it.”

He said, “What are you going to get?”

If you'll pardon the expression, I said, “I'll be damned if I know but I know we'll get thousands of shovels and all sorts of tools, hand tools of all kinds, and I don't know what else.”

So he said, “Okay, go ahead and take the warehouse.” And that's what we did.

In the meantime a lot of agencies were getting a list of what they had and were looking at it and they wanted this part and that part. Well, if they can unload the warehouse, they can get it off the government's shoulders and get on with the war. So we got the inside and we shipped them by box car and every other way to Atlanta, and we got all sorts of things. We got air compressors, we got a world of brand new tools that had never been unpacked. So that gave us the tools. Then we had the trucks, get things going. So that's about the way it evolved. We were in business pretty fast. Didn't take us long.

Within months?

About that. About that. We had a nucleus in all areas. Puerto Rico was a problem. The malaria rate in Puerto Rico at the time, as I recall, was 122, 122.6 to be exact, I think I recall. You're going to have a pretty good sizable group of men down there. Bern was down there in the meantime, so I got a hold of Bern and told him, "We'd better put a major effort in Puerto Rico independent of Atlanta because you've got too far a distance. Would you take them over and direct them?" And he was delighted.

He said, "Yeah, give me something to do, I don't have anything to do down there." So we got Jack Henderson as a real top flight engineer, a very mature man. At that time he was one of the top engineer malaria people at the State of Georgia, so he went down. So we set Puerto Rico up on that basis. Then we had the little outbreak of dengue down in Key West with the submarine base which gave us an opportunity to develop a mobile unit that we could put on flight transports and take down with staff. So we felt we might have more of these. So we set up a broad scale emergency group under Wes Gilbertson. He was an engineer of some competence with us down here from the early days, he and Harry Hansen, and so about that time we had the big Dengue epidemic outbreak in Hawaii. And, again, the pentagon got together and we got the call from Dr. Parran, "Stop it. Whatever you need you've got the authority, no limitations, staff or anything."

I said, "Well, we've got a mobile unit, we can load up the mobile units and we've got Gilbertson here, we can get him over there in a matter of—"

He said, "How long will it take?"

I said, "Tomorrow. We're ready. If you can get the planes down here we'll load up and go, but we can't take enough men so let me get Frodenburg and see if we could get army troops, companies, attached to us." And they did, they came through. So we got a ride.

A little interesting aside, Gilbertson got over there and he called me and said, "The army has attached a major, two majors in charge of the troops and he said, "I've got two little bars on."

I said, "Well, I don't know whether they've got authority but by phone you're promoted to Lieutenant Colonel. So change your bars. Have you met him yet?"

He said, "No, but I don't know how I should report to them or what."

I said, "You don't report, you are in charge, you go down and get some silver leaves and put them on your shoulder and I'll write you orders promoting you to Lieutenant Colonel and take it up with Washington later." So we did.

But he did a beautiful job on that. That set up well with, I think, in Furman's history, he got that well documented. Incidentally, back on Puerto Rico, I think we came out of there—no, I'm not sure of the rate but it was down around less than 20 or thereabouts. Incidentally, the malaria rate—I suppose this is recorded somewhere, but I remember it because it was so impressive that was taken up in Washington, Walter Reed, the

epidemiology board, that the rate among service personnel in the continental United States was 0.6. A fantastic rate of considering what—

We're about to run out of tape. Do you have another question that you'd like to ask?

If you had it to do over, what would you do differently in terms of—

I'd fight harder to have gotten the environmental part—push it to be integrated into CDC. Oh, I wouldn't have changed and everything. Certainly wouldn't have affected Langmuir's contribution....and I don't mean this in any way except a historical fact. I would have tried to have oriented Vonderlehr and little bit more to have taken a more aggressive interest, and if he wasn't, to have gotten a deputy that he could have turned much of it over to. Those two things are about all.

What was the single most important thing in your mind that gave CDC its reputation?

I would hesitate to say. I'm not sure really what Langmuir's contribution—because it came at a good time. In early years it was so well done, and of course the competence it had—well, first, I think you've got to remember we spoke of the returning troops and so forth but attached to that was a lot of other activities. For example, the development of a recognition that with air travel, building up as it would, how do you control the importation of vectors, perhaps even infected vectors, because certainly we've got *Aedes aegypti* throughout the Gulf States and even up as far as Norfolk and if you've got some infected mosquitoes in here with yellow fever, you could have reintroduced scarlet fever and yellow fever pretty prominent in Brazil and elsewhere in South America. You had plague beginning to move eastward in the wild rodent. We were just beginning, under the MCWA, to pick up a little of this. What and where and how would that be faced? So that was part of CDC and I think overall that was well met on the spray. Of course, in the early stages you got so many complaints because of the using crude insecticides and the complaints from passengers that they were allergic to it or they reacted to it or just stifling and all this, and amongst CDC's contribution was aid in developing the old 43. I don't know what it's called now but the standard effective insecticide against the flying insects or insects, and yet no known demonstrated impact on humans and a very pleasing odor. A lot of other things that CDC did. In fact, just about everything they did has paid off.

That's a good note to end on. Thank you very much for coming.



END.