AN INTERVIEW WITH DR. MARTIN CUMMINGS

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Introduction and Biographical Sketch

This interview with Dr. Martin M. Cummings is one in a series of "oral histories" focusing primarily on the origins and development of the extramural programs -- most especially the grants programs -- of the National Institutes of Health, beginning with the establishment of the Division of Research Grants in 1946. Like Dr. Cummings, most of those interviewed had critical roles in the development of the extramural programs.

The grants program constituting the largest component of the NIH, the interviews also reflect judgments and perspectives about the impact of the grants programs on health and science.

Dr. Cumming's medical training came from his years in the Veteran's Administration, first as Chief of the Tuberculosis Research Laboratory and later as Director of Research Services at the Veteran's Administration central office, as well as from Public Health Service stints earlier in his career. Unlike some of his NIH and NLM colleagues, he came to the National Institutes of Health and the National Library of Medicine later in his career, joining NIH in 1961 as the Chief of the new Office of International Research which, in fact, he helped to establish and develop. He served, as well, as Associate Director for Research Grants at NIH for a year and then became Director of the National Library of Medicine in 1964, serving for almost 20 years in that post. Dr. Cummings complete curriculum vitae is included at the end of this history.

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Interview with Dr. Martin Cummings

SS: I am talking this morning to Dr. Martin Cummings, the recently retired director of the National Library of Medicine, and long-time official of the National Institutes of Health. One of the fascinating things is how people get into a professional track. How did you come into the National Institutes of Health?

MC: I began with the NIH as a result of an innocent meeting with Dr. Jim Shannon in 1959 when I attended a session for senior executives at Williamsburg. Jim was one of the faculty talking about the programs of NIH. Somehow I managed to arrange to return to Washington with Jim on a flight that he had set up, courtesy of the military. On that flight I recall his telling me about his interest in the development of an international health research program at NIH. He described work that he was doing with John Fogerty, and I think Lister Hill. At that time the notion was that they would create an institute for international research. I don't recall what comments I may have made in that context, but about six months later, I received a call from Joe Murtaugh at NIH asking me whether I would come in and visit Jim and others for further discussions about this international health research project.

SS: Where were you at the time?

MC: At that time I was chairman of the Department of Microbiology at the University of Oklahoma. I had only recently joined the faculty there at the medical center, having spent the previous twenty years first as a Public Health Service officer in the early days of the Communicable Disease Center in Atlanta and then as the head of a tuberculosis research laboratory for the Veteran's Administration, also in Atlanta. Then I moved to Washington as Director of Research for the Veteran's Administration, so I had government experience; I was weary of it and I wanted to get back to academia. I went to Oklahoma, and this leads us up to the visit to NIH.

On that visit Jim described the changes that were taking place in the legislation. As I recall, he said that he was in favor of an international health research institute. I remember the discussions in which everyone agreed that we could do everything that the legislation called for without having a formal institute. I spent a day meeting a number of people there, vaguely sensing that they were sounding out my interest. But I had no offer at that point. I went back to Oklahoma to do my teaching and research, and I received another call asking whether I would see Dr. Ernest All and Dr. Ken Endicott. I remember meeting them and bringing them home and having a very pleasant evening together, where they said, "We'd like you to come back and work with us. Jim would like to set up this international health research institute and he'd like you to start it." I gave all the reasons I could for not moving; I'd just getten settled in Oklahoma City, but, to make a long story short, I agreed, after subsequent discussions, to go on a two-year leave of absence. I left my family and my home in place and began the usual consulting, commuting, and then moved in full time. I brought some young staff associates with me to help develop this program, and 25 years later I found that I was still at NIH! I recognized after the two years that I would not go back, so I sold my house and brought my family, and that's how I got started in 1960.

SS: I have one question, because it's a subject of a recent conversation with a good and serious writer for a popular magazine who is going to do an article on the Institutes. She asked me: how does NIH get good scientists to work for them? They can't possibly make as much money as they do even in a university. Was that ever a factor in your case? Was it a factor generally, and is it a factor today?

MC: At the time I joined the Public Health Service, during World War II, I can tell you, forthrightly, that a lot of people joined the PHS to avoid military service. They thought that was the lesser of two evils. It reminds me of how I came to the Public Health Service. I was a medical student at Duke during World War II, and like many others had to choose between being in the Army or Navy, and we had a program in which the last two years of medical school were in fact supported by the military. I was a private first class in the Army, going to medical school. When a British medical school was bombed, a certain number of American medical schools agreed to take the students so that they could finish their training. Duke was one of those schools. In an innocent way, that led me to becoming a Public Health Service officer. I was called into the Dean's office and was told that I was going to be transferred to Yale my senior year. I would do my surgery at Yale with another gentleman. So with two of us being transferred, that would make places for two boys from the University of Manchester. The man who took my place is now a distinguished professor of neurology in England, and became the Director-General of Health for Great Britain. So I feel preety good about that.

What happened to me was I moved from Durham to New Haven with wife and child -- in medical school I was the first to marry and the first to have a child -- and while there, as a member of the Army, my class was visited by three senior officers of the Public Health Service. I can remember the names of two of them; one was Dr. Herman Hilleboe, who was head of the Tuberculosis Control Division of the Public Health Service. The other was a man named Dr. Ted Badger, a very dynamic fellow. They came and talked to our class and said, "Hey, we're in the War too and we're short of officers. We have a series of hospitals around the country and we need medical officers." One thing led to another, and I decided that sounded pretty interesting. They had a hospital in Seattle, and one in Staten Island and one in Boston, so I agreed to have an interview with them. They said if I would join the Public Health Service I could be transferred from the Army and I would be assigned to a Marine hospital. That's how I wound up in the Public Health Service. I went to the Boston Marine Hospital and I was in the PHS from 1944-1953. I left to become a member of the Veteran's Administration staff.

SS: I believe Ken Endicott said he joined the Public Health Service because, at that time, a few years earlier than you, it was the best job he could get. It paid more money and it enabled him to get married.

MC: Different people joined the Public Health Service for different reasons. I had no doubt that during other wartime periods medical officers joined the PHS, and various programs including NIH, because it was preferable to military service. I don't think the economics had very much to do with it. Pay comparability at that time was pretty good. From 1960 to the present, the disparity in pay levels became more evident, and the NIH has been able to recruit and retain good people because they offer such marvelous facilities and an environment second to none to do research. That sorts out the kind of people that want to go there. And, of course, it means that you don't have to spend your life

applying for grants and worrying about where you were going to get the money.

SS: Ken Endicott and Ernest Allen came to you in 1960. Your wife didn't say, "I don't mind going back to Washington, but how can you give up this extra $10,000 income when we've got children to put through school?"

MC: She did talk to me about moving the children again. We had just moved there a year and a half earlier, and I had three sons; two in high school and one in mid-level school. So that was a real problem, which is why she and the children stayed for awhile, until one of them got through high school. The salary was comparable. I took my beatings, and when I finally decided to stay with NIH I had to sell my house in a hurry and I lost a lot of money on it, but that was a circumstance of the general economy at the time.

SS: I want to talk about the development of the international program, but I want to ask a question about the political dynamics of that movement in time. John Fogerty and Jim Shannon had an unusually good relationship, and, I take it, the Irish connection made it easier for Shannon and Fogerty to talk to each other. Nonetheless, Fogerty put pressure on Shannon for various things. That's what comes across from reading the written record. Who really thought of this international program?

MC: I have often wondered about the origin of that program, and I must tell you that as frequently as I could, I asked people, and I suspect that I could not tell you whose idea it was. It could have been someone I never knew about. I think Joe Murtaugh felt that some part of it was his idea, and Jim felt some part of it was his. I'm not sure who first suggested it.

SS: Fogerty was very much in favor of it though?

MC: Definitely interested.

Jim introduced me to Fogerty and early in my work it was clear that he was supportive and so was Senator Hill. I never had any feeling that this was an engrafted program that would not be supported. On the contrary, I believed that Shannon felt that if it was left to its own devices it would expand too rapidly and would not be what he wanted. He, in fact, proved to be the person who placed the greatest constraint on the program. He made our small staff justify everything that the Institutes wanted to do. It was a very difficult job. We spent the first year just trying to identify what NIH was doing overseas. There was no central accountability for the grants, the contracts, or the fellowships to and fro. That was probably the main contribution we made in the first year: to establish a system through which NIH could know what was going on. They didn't know how much money they were spending abroad. I think we were spending over $20 million when we made our first reckoning, which was a pretty good budget for 1960, and it ultimately went to about $30 million.

Originially these grants were no different than the domestic grants, but because of the International Health Research Act of 1960, new criteria had to be established. This called for some relevance to U.S. medical interests. You could no longer simply made a grant to a foreign scientist to support whatever idea he had, unless we could justify its having some benefit to the U.S.

SS: What about schistosomiasis?

MC: They could justify that as being of great importance to American troops working in Egypt and other parts of the world where they had been exposed to schistosomiasis -- and in fact, in those years I think we had schistosomiasis in Puerto Rico -- so that was not a difficult one to fund. But there were many other grant applications that came in for basic studies for which we couldn't really see anything other than a product that satisfied the investigator; it had no relevance to anything else.

SS: Were there any restrictions with respect to the nationality of the investigators, or did there have to be an American on the team?

MC: No. In those days there were no restrictions on the nationality of the investigators. In fact, it soon became evident that multi-national involvement, where it occurred, would involve the major international health organizations like WHO and PAHO. One of the most interesting developments at that time came when Jim Shannon made $300,000 available to the World Health Organization to start a research program. When WHO bagen to write proposals, it came to the usual NIH study section and council review, and some of their proposals didn't qualify, so they were turned down.

My first exposure to Dr. Candau, who was then Director-General of WHO, came because he objected to a national organization (NIH) turning down a request from an international, super-national organization. It was a fascinating problem. "How dare you Americans say that we at WHO don't know how to put out a proposal!" It was a very sticky problem. It was U.S. money, but Candau didn't think we should turn them down. So, we had long extended discussions, and as a result we changed from grants to contracts. Such proposals could then be negotiated, and Chuck Kidd was a crucial person in working out the solution to that. I remember very clearly that he was deeply interested in that. We spent many days on it, which led to the further growth and expansion of the WHO medical research program in immunology and population control, and the rest just flourished.

SS: Fogarty was the principal sponsor of the legislation and International Research Act of 1960 of the House; was Hill the principal sponsor of the Senate?

MC: Yes, I believe he was.

SS: Did you just run the international proposals through the regular study sections, the regular peer-review process, or did you create new ones?

MC: We ran them through the regular NIH apparatus because we didn't want to compromise quality, but we had a third level of review. There was the study section review for technical or scientific competence; then the Council review for relevance to the Institutes' programs; and then we created an international body to review the grants to see if they complied with terms of the International Health Research Act, namely, does it have relevance to U.S. interests. We brought together a very distinguished group with people like Walsh McDermott and Bob Watson of the Rockefeller Foundation, and for the first time there was an international advisory apparatus.

SS: Did that take longer?

MC: It slowed down the process by weeks, but the timing of the meetings of the

international group were always immediately after the last council review. The numbers weren't that great. There weren't thousands of international grants; they were in the low numbers, hundreds at the most. This protected the NIH against charges that we were an AID type of operation rather than a scientific operation. I think it was a very wise move.

SS: Do you have any idea what the level of international research is at NIH these days?

MC: All I can tell you is that when I left it was a little more than $30 million U.S. dollars plus enormous amounts of counterpart monies -- PL480 currencies. And the international program that we started also was responsible for acquiring those funds through the Congress and for defending their use before the Congress. That, I must say, was not as tightly drawn or as well managed as was the regular dollar programs. The use of PL480 monies always had more humanitarian, sociological and maybe even some political interests involved with the scientific aspects.

SS: And how were those grants distributed?

MC: NIH went to the Congress each year and made a request for a certain amount of, say, Indian rupees, or Israeli pounds, or Brazilian cruzeros, and we got a lump sum. Then we made them available to the Institutes who would draw on our accounts. They originated the ideas and the scientific aspects were completely in their hands. We were the procurer and manager of the overall fiscal and other administrative arrangements.

SS: Essentially then, in addition to the individual grants or project grants, there was then the PL480 funds which basically went to the institutions in support of larger programs?

MC: Yes, they were usually big programmatic grants. For example, the Heart Institute might be interested in studying the differences between heart disease in European Jews. They sent a team of intramural scientists to work in Israel with Israeli scientists. We supported not only the research but also all the costs involved in travel and living, with these PL480 funds. Other people went to study tropical diseases in Brazil and Central America. A lot of the good work done by the Central American research unit was done with PL480 funds. Johns Hopkins wanted to study infectious diseases in India and we set up a unit in Calcutta that was supported with our money. A good bit of that marvelous program on cholera research in Pakistan, which was in Dakka SEATO Cholera Research Lab, was supported with these Pakistani funds. It saved U.S. dollars from going abroad, and used up money that these people owed us for, usually, the sale of agricultural surplus materials. A lot of good research was done with that kind of funding.

SS: These days the NIH actually has offices in various parts of the world, at least in Europe. Did you set those up?

MC: Yes, I did. Of all the things I did in the years I worked with Jim in the international program, I am most proud of the program which set up offices under the leadership of distinguished scientists. Those offices were created at a time when our advisory group didn't feel that they had enough information about, say, the local environment. Somebody in Santiago, Chile for example, would send in an application that read well on paper. We never knew who the

guy was. We didn't know whether he was a professor full time or part time, and we were constantly sending people out to check on these things. After awhile we discovered it was more effective for us to have regional representatives in various parts of the world. So we set up offices in London, Paris, New Delhi, Rio, Tokyo, and were amazed at the quality of people who were willing to work there. We had people like Heinz Specht who was an intramural scientist who ran the Tokyo office with great skill. Peter Kochweiser ran the Rio office; he was a very distinguished biomedical scientist on his own, as was Charles Huttrer, one of those who discovered the antihistamines, a biochemist who ran the Paris office. That gave me a great deal of pride. We had good people in all these offices and they provided extraordinary information of great value. It pooped out after awhile because the embassies didn't want to have more people around. I don't know what year it fell apart, but over the years that I was there they were extraordinarily valuable.

SS: They were important, I'm sure, particularly in the first period of the international program. Later, did the Fogerty Center for International Scholars come under your aegis as well?

MC: The predecessor to that was the Office of International Research. We had a program of international fellowships. First we were bringing foreign scholars to the U.S. to study here, then we developed a reverse program that allowed American scholars to go work abroad. Those all were ultimately brought together and became part of the Fogerty International Fellowship Program. But Fogerty Center and Fogerty programs were the outgrowth of this Office of International Research.

One of my deputies, David Milo Levitt, after I went to NLM, became head of the international program and head of the Fogerty Center. There was a transition when John Fogerty died and most of those programs just fell into the Center naturally and permanently.

SS: In the decade of the sixties you went to the Library of Medicine?

MC: In 1964 I went. I was in the International Program four years.

SS: What was the level of activity at that time? What was your budget? It obviously went up from $20 million when you did your first accounting.

MC: I think it was about $30 million. You should check it, but that's the figure that sticks in my mind, in U.S. dollars. I don't remember what the equivalent in counterpart money was. All I know is that we could get bushel baskets of it and it kept depreciating almost as fast as we got it. As the foreign monies were devalued, they had little buying power after awhile.

SS: By the time you left in 1964, what ballpark number of scientists would you say the program was supporting overseas? Was it scores, or just a few dozen?

MC: I would guess hundreds. More than scores or dozens.

SS: And how did U.S. scientists in the universities and medical schools and research institutions view this? Did they think it was a good idea?

MC: When there was a lot of money, they thought it was a great idea. It wasn't until later when money got tight for awhile that they thought it might

have been competitive. But never was there any strong anti-international research movement. I don't ever recall anybody taking a harsh position about our supporting science abroad. And like the support of scientists in this country, the NIH apparatus picked out the best abroad; some of them got Nobel Prizes and it was a pretty high quality program. Money wasn't given to somebody just because he was poor and hungry; first they had to pass the review of their own national committees. The Swedes had their own committees, as did others, and we were really getting a pre-selected group.

SS: You lead me to my next question, which is whether there are exceptional outcomes of these grants that we should mention as illustrative of the type of quality and great importance of the program.

MC: I think given a little time one could identify some examples of unique contributions obtained from this program that deserves special mention. I think it would be more than a handful. There is no question that the research which led to the development of the treatment for cholera in Pakistan, and the development of improved vaccines against cholera is attributed to this research, which led to the understanding of epidemics. Identifying the cause of hemoragic fever in Latin America is another example of work that was done in the international program of great importance. There is some very sophisticated basic research in the cancer field by Haddow and others that could be recognized, but that would take more careful research.

SS: Where would we look for those relevant contributions? I'd like to get those on record.

MC: You ought to ask somebody in the Fogerty Center to do it for you. They have all those records, they inherited them all, and in the context of communication and other kinds of research, there is a nice little book written by Dr. Mary Corning which deals with this general subject. Mary Corning was in charge of the National Library of Medicine's international programs. She had a Brookings Fellowship and wrote a book on international health including research and communications. The book was published about five or six years ago and was used as a text at places like the Hopkins School of Public Health. She identified some unique examples of collaborative and individual research, so her book would be a good source. I don't know the precise title, but I'm sure you can find it.

SS: I'll do that.

Later, under your leadership, the Library of Medicine became known almost as much for its international reach as for its national importance. Is the National Institutes of Health today still considered an international as well as a national institution?

MC: I think so. I don't know this absolutely, but I believe you can go anywhere in the world and have recognition that the NIH is not only a powerful granting agency that supports high quality research and does good intramural research, but I think through its continuing international relationships it is recognized as a major contributor to international research. Again, people at the Fogerty Center could give you a more current feeling for that.

SS: But is there still an international grants program?

MC: There still are international grants and contracts and fellowships. I don't know their size, but you could check that. I know that the staffing there is a lot bigger than it was. I think we had about 13 positions when we had the international office, and I think there are over 50 of them now; a whole floor in the Lister Hill building. They must have a lot of things going on.

SS: Shannon wanted you to come because he was terribly interested in the creation and establishment of this program and thought you were the guy to lead it.

MC: I don't think Shannon knew me well, except as by my reputation as Director of Medical Research at the Veteran's Administration. What might have been of some attraction to him was that I worked in the field of communicable and infectious diseases. That was my specialty. And in the international field at that time the big problems were still things like smallpox and parasitic infections, etc., so I think he may have looked at my resume and said, "This guy ought to know something about it." I had a small amount of international work through AID in Guatemala and other places. Somebody suggested me to Jim, but I don't think he woke up one night thinking, "Marty Cummings is my guy." When I went to work for him, I was a bit intimidated by his enormous scope and skills and talents. Also by his demeanor. But as a neighbor of his I came to enjoy his friendship as a social guy. Not many people think of Jim as a social guy, but I had the pleasure of watching him build hi-fi systems and on Christmas he would call me over and say, "Here's a speaker I made. I want you to try it out." I became very much a fan of Jim Shannon, even though it was hard to show it. He wouldn't let you show it. I now hold him in the highest regard. My future career development was largely influenced by the example he set for me. I still look forward to seeing him when he occasionally comes back. He always comes to the Library and puts his feet up on a table and we talk about anything. Right now he's hooked on word processors and computers.

I learned a lot about management from Dr. Jim Shannon and Dr. G.B. Mider. Those two guys helped me when I went to NLM. Jim even sent Bo to be my deputy at NLM in 1969.

SS: Jim encouraged you to go to the Library, didn't he?

MC: No, he didn't want me to go at first. The Library at that time had the same organizational status as NIH. It was the Bureau of the Public Health Service, and here was this little mouse and this big giant at the same campus. No, I was picked by the Board of Regents at the Library and the job was offerred to me by the Surgeon General, Luther Terry. I of course went to see Jim and told him, "They're out of their minds. What do I know about that?" He said, "Look, what you're doing here is more important. They don't have a grants program." And he told me all the things NLM needed to do. As I listened to Jim, I could see all the opportunities. He knew the place better than I did.

To make a long story short, I agonized for two months over that offer. I went to NLM and read all their documents. I was called upon by a number of their board members, and I finally went back to see Jim and said, "I want to do it." And he said, "If you decide to do it, I'll help you." And by God, he did. At that time, I want you to know, I was doubling in brass. I was not only Chief of the International Health Research Program, but Ernest Allen had

gone downtown, so I was Acting Associate Director for the Extramural Programs. One of the things that drove me to the Library was that I was just overloaded. I was groud down by having to work both these jobs. I did them for about a year, and as I look back now I think that maybe helped me make my decision to go to the Library.

SS: Before we get too deeply into your going over to the National Library of Medicine, I do want to come back to the matter of Dr. Shannon's keen interest in the international program. I don't think he was simply forced by political factors outside NIH to do it; he obviously had an interest, and he wanted it to be good, and for whatever reason he wanted you to head it. It was a personal choice, even if you were recommended by somebody else. But, from what you say, as soon as you got there he put constrainst on you, made sure you had hurdles at the right level, and that sort of thing. Was that typical of him? Fred Stone, for example, had given me illustrations like this in which the fact that he expressed confidence in you did not mean that he was going to give you absolute free reign in anything you thought needed doing.

MC: I don't know whether it was typical, but it certainly applied in the case of several of the NIH programs. It's interesting that you should bring up Fred Stone, because I would have said to you that his was one program that Jim Shannon kept his hand on pretty tightly; didn't let it grow and develop as rapidly as it might have. The international program was another, and without identifying Institutes, I think he had a feeling that certain Institutes should go faster than others. And that was based on his own professional judgment and whatever indicators he may have had as to what the course of direction biomedical science would go. I think, in the case of Jim, he wanted absolute certainty that we would never be characterized as a simple, do-good, AID type of agency. That came up all the t9ime. He wanted to be able to say, "When we support something overseas, it's quality." So he kept his hand on that program primarily for that reason. I don't say that everything we supported oversease was high quality, but on a large scale you always have some weaker links.

SS: That's only natural.

Second Interview with Dr. Martin Cummings

SS: Dr. Cummings, I'd like to start out by asking you to give your summary impressions of Dr. Shannon as a leader of the National Institutes of Health, and as a manager, an inspirer.

MC: I believe that Jim Shannon was a man of all seasons, and was a leader at NIH at a critical moment when growth and development were essential. His political skills were enormous, and through his contacts with the leaders of the appropriate committees, as you well know, he was able to instill a confidence in the activities of NIH, so that budget increases were forthcoming, largely based on his assessment of the needs for biomedical research. Within the context of leadership at NIH, I would say that his management style was effective, but never led to complete happiness on the part of the Institute directors. Jim was very forceful in his assessment of what should be done, not simply in the corporate sense, but also his knowledge of medical science was so deep and penetrating that he often made judgments with regard to programmatic needs in various categories. That's pretty unusual.

SS: You mean in contrast with what most overall directors would have done? They would have left it to the person in charge of the particular Institute?

MC: I think he often influenced their sense of priorities. But within the corporate arrangement of NIH, where he dealt with his deputy directors and his associate directors, Jim was a leader who provoked discussion and controversy. He used that technique to elaborate the course and direction of particular issues. I was never certain whether, prior to his morning staff meetings, decisions had been reached by a smaller group, and then some of us simply attended to hear the decisions. I guess for more than a year I was convinced that that's how the NIH worked, but in my later experiences as part of that family superstructure, I convinced myself that the give and take around his table was sufficiently open and unbiased. Decisions really were made by all the participants. We were not simply rubber stamps.

One has to then add the last dimension in analyzing his leadership, the personal characteristics of the man. Here I can only speak from my relationship with Jim. I have always found him to be forthcoming, frank, and fair-minded. I respected and still honor the friendship that came out of my professional relationship with him. I believe that Jim's contributions to local biomedical science will take many years to be measured, and I hope that some of the people who are now interested in doing a biography of him are able to capture the full scope of his reach, because it was phenomenal.

SS: That's a very fine summary. I want to ask several particular things. We talked about how you came to be chosen, first to run the international program of the National Institutes of Health, and then how you were picked without Dr. Shannon's involvement. I assume that, while Dr. Terry may have told Dr. Shannon he wanted you to be the Director of the National Library of Medicine, that was not anything that Dr. Shannon particularly encouraged, because when you talked to him about it he really didn't want you to go.

MC: That's right.

SS: What about that relationship between the Director of NIH and the Surgeon General, with respect to appointments. Could Dr. Shannon name directors (other than the Cancer Institute), and did he? Did he pick people?

MC: I believe that Jim Shannon picked people for his own immediate staff, approved the appointment of all senior staff at NIH. I know in the period that I served there that he reviewed all the senior appointments. I think he also was influential in the selection of personnel outside NIH. It would be unlikely that a new commissioner of FDA, or a new administrator in Health Services Administration, say, would be appointed without at least knowing what Jim's views were of the individual. I think he had a profound influence on appointments.

SS: Do you remember whether it was within his authority simply to name a director of the Heart, Lung and Blood Institute?

MC: I can't say that I know what the actual authority was.

SS: In some cases I remember that the Surgeon General made the appointment, but it seems unlikely that he, obviously with plenty of other things to do, would have made the search for the right person in every case; maybe with the creation of a new agency, like the Library, perhaps.

MC: I do remember something about how the Library appointments were made but I can't say that I know the rules and regulations that guided appointments at NIH.

SS: How were the Library appointments made?

MC: Prior to 1956, when the National Library of Medicine was the Armed Forces Medical Library, appointments were made by the Surgeon General of the Army, and the position was one given to military officers. In most cases the appointment never exceeded three or four years, and only in a few cases did it extend beyond ten years. My immediate predecessor Brad Rogers served for twelve years. I think he was appointed while he was a major in the Army, and then converted to a Public Health Service officer. My appointment was the very first as a civilian; a non-military officer. The way that appointment was processed, as I understand, was that the Board of Regents, which is the governing board of the National Library, appointed by the President, and confirmed by the Senate, set up a search committee. They did the usual work of screening candidates. In my case, I did not seek the position. I was called upon by the subcommittee of the Board acting as a search committee. I can recall the chairman, Dr. Norman Brill, who was head of the department of psychiatry of UCLA; Dr. William Falk, professor of surgery at the University of Kansas, and Dr. Saul Jarho, who was an internist and medical historian in New York, visited me simply to learn whether I had any interest in the Library. I remember a very pleasant interview, and wondered what could be going on. This was followed by an invitation to meet with Surgeon General Luther Terry, who then informed me that I had been recommended by the subcommittee of the Board, and that he had talked to other people in the Public Health Service about the recommendation, and he was prepared to offer me the position.

I have since learned who these other people were, and that Ernest Allen was one of those people who had endorsed my appointment and he encouraged me to take it. Another was Dr. Jack Masur, the late director of the Clinical Center. That's really what led to the invitation that I received. I may have told you that I then discussed the invitation with Jim Shannon. He told me of all the problems that the Library had, and said it wouldn't go anywhere until it got some extramural programs, and that the chances of that happening were very slim. He really tried to discourage me. Nevertheless, I considered the offer for several months; I reviewed all the documents of previous board meetings and

the policies of the Library, and read everything I could get my hands on. Then I went back to Jim and told him that I thought I would like to do the work. At that moment, he indicated his willingness to be supportive. In fact, I recall that he came to the first meeting of the Board of Regents after my appointment in January 1964, and made a statement to the Board of what he believed NLM should do -- how it should relate more closely to NIH. He told the Board what he told me, that he thought it would be very difficult for me to accomplish what NLM needed to have done; mainly to get an extramural program. He was very pessimistic that we would ever get the authority to do that. He made it clear that he viewed NLM to be an important part of the biomedical apparatus for supplying information to the world. This was typical of Jim. He called it the way he saw it.

SS: That's a very good answer. It also reminds me of something else that I have been picking of in these interview, and that is the influence of Ernest Allen over a long period of time, at various critical junctures. By this time, what was the role of the Surgeon General, vis a vis the NIH and the Library of Medicine?

MC: That's a very important question, Steve. At this time, the National Library of Medicine was a bureau of the Public Health Service. It had the same organizational stature as the NIH, and the Bureau of State Services. The director of NLM reported directly to the Surgeon General. He went to the staff meetings downtown, and of course those meetings were dominated by the director of NIH. It was like the elephant and the mouse; Marty Cummings didn't behave like a mouse I hope; I dealt with the Surgeon General in the same way that Jim did. However, whereas Jim probably went around the Surgeon General in accomplishing what he felt NIH needed to do, I dealt more directly with Luther Terry. Because the Library was such a small organization, it needed to have the support of the Office of the Surgeon General to be able to approach the Bureau of the Budget and the Congress. I was no Jim Shannon. I had no direct relationships of any great depth with Lister Hill and John Fogerty and other politicians at that time. I ultimately cultivated them, and they became very rewarding, not simply in terms of library interests, but they had enriched my knowledge of the process of government.

Luther Terry was deeply interested in the affairs of the National Library. He came to every meeting of the Board of Regents. He made a brief but important statement to the Board; told them what was going on; made commitments to the Board that suggested that if they would set the right policies, he would see that they were promulgated. I should say that, in the years that I served under him, he did just that. He was a staunch supporter of the National Library of Medicine, and I give him a lot of credit for the growth and development of the Library in those years. He introduced and supported our draft plan for Medical Library Assistance Act, our extramural grants' authority.

SS: When was that?

MC: That was 1965. He made it clear to the Secretary and to the Congress that he was supportive of NLM getting its own grants authority. I also give him credit for being very supportive of our efforts to automate the Library. We had this big dream that we would be the first research library to use computers for its internal technical processing and for delivery of information. Luther Terry was absolutely supportive.

There's a little aside here, that may be of some interest to you and others. When I was serving as Associate Director for Research Grants, in 1963, (when Ernest Allen had gone downtown as Deputy Assistant Secretary for Grants Contracts -- I was doubling in brass then) one of the issues that came before me was a grant application from the National Library of Medicine to the National Heart Institute, in which they were asking for support to procure a computer to develop something called "MEDLARS". Now this was interesting because the study section and the Council of the National Heart Institute had reviewed and approved it. But somewhere along the line someone raised the question: How can part of NIH make a grant to its sister agency? That problem was dumped on my lap!

I called Ernest Allen, and I said, "I've got this thing here; it's a judgment call and I can't find any precedent for this." Ernest reminded me, "Oh, there is a precedent. NIH, through an arrangement you and I made a long time ago, makes grants to Veteran's Administration investigators. And he said, "If we can give grants to people at the V.A., why can't we give grants to people at the Library?" So I recommended that the Heart Institute be allowed to pay that award. And that's how NLM got its first computer system -- through a grant from the National Heart Institute.

As a little addendum to that, when I came to work here at the Council on Library Resources, I also discovered that this small foundation had made a grant to the National Library of Medicine, prior to my being there, to Director F.A. Rogers to plan for the development of a computer-based bibliographic system. It was something like $50,000. The Council gave NLM the planning money, and the Heart Institute gave the Library the money for the computer hardware, and that's how the whole thing got started.

SS: That is fascinating. Has that been reported anywhere? I don't think Dr. Miles mentions it in his history.

MC: No, I don't think it is recorded history. I think it needs to be formalized. I have told this story to many people -- to the Board and others. But I don't know that it has been ever formally documented.

SS: That's a marvelous story.

All this time, Luther Terry, who had been Surgeon General since early in the Kennedy Administration, continued through the Johnson Administration?

MC: Part of the way through, I guess. I know that there was an abrupt ending of Luther's tenure as Surgeon General. In that phase, it came more rapidly than people than people expected him to go.

SS: What he did, though, was to go to the University of Pennsylvania as Vice President for Health Affairs. I think he simply resigned, and that it was before the change in administration. During this period, the Surgeon General still had considerable authority.

MC: Bill Stewart followed Terry, I'm almost certain.

SS: Yes, I think you're right. That was in the Johnson Administration. In Luther's case, his widow was saying to me last night, he really was deeply interested in the Library, which she says was one of his favorite things.

MC: That may very well be. I can simply attest to the fact that I found him extremely supportive.

SS: And he had good relations on the Hill, certainly.

Obviously NIH, and subsequently the Library, had lots of friends on the Hill, and you often had more friends on the Hill than you did within the Executive Branch. Maybe you'd like to talk about Dr. Shannon as a political operative within the Adminstration -- not just vis a vis the larger political arena. How did he do with respect to directors of the Office of Management and Budget, and secretaries of HEW?

MC: I would say that Shannon found ways to deal directly at the highest levels of the departments. In the course of time, he would establish relationships with the Department Secretaries. I am certain that was true for many years. Apparently he believed that when he had a major issue to deal with, he should try to deal with it at the highest levels. I know that many secretaries did not feel that he imposed on them; I think they invited that relationship. It was certainy true with John Gardner and Wilbur Cohen. I don't think I can say much about his relationship to OMB. I think he went to their budget reviews simply as a protocol exercise to fulfill a sort of perfunctory requirement. He told them what he thought was right, but he knew that he really had to convince the Congress and ultimately that's where his energies were addressed. Except for perhaps one or two Directors of what was then the Bureau of the Budget, I don't think he held the Bureau in high regard, and consequently I don't think he felt it necessary to expend a lot of time and energy on it.

SS: That covers those relationships I thought were important to get on record.

So, Jim told you and you recognized, in any case, that withouth an extramural program the Library would not grow and would not become a major factor. How did you initiate that?

MC: What I did first was to visit Senator Hill and talk to him about the Library needs to determine whether he was interested. I was pleased to learn that he thought the Library should have new authorities, and he invited me, informally, to draft legislation. With that invitation, I then engaged Dr. Marjorie P. Wilson, who was then at NIH. I asked her to come to NLM and help write the legislation. In fact, I would say most of the credit should go to Marjorie Wilson, and to legislative assistant in the Department, a lady by the name of Elizabeth Chase. They essentially wrote the bill that became the Medical Library Assistant Act. The draft bill was presented to both Senator Hill and Congressman Orrin Harris, who became interested in the House. I talked to Congressman John Fogerty and I don't know how the wires got crossed, but both Harris and Fogerty introduced essentially the same bill independently.

SS: But that's good, isn't it?

MC: It was good. When Senator Hill introduced the bill, it sailed through both the houses of Congress. It was signed by President Johnson in the summer of 1965. This authorized the Library to expend about $105 million over a five-year period; it gave NLM the enabling legislation to support construction of new medical libraries; research in library science; training of information scientists and librarians; and for provision of support for scholarly works and publications. There was no authority in the Public Health Service to support publications, but we got that authority. After discussions with Dr. Michael DeBakey, Chairman of the President's Commission on Heart Disease, Cancer, and Stroke, a regional medical library plan like the Regional Medical Program was developed. The report that Mike DeBakey's committee issued had a chapter that

dealt with the needs of libraries and improved communication. Through this report we got the medical community to support us.

SS: Insofar as the medical community did or didn't support his plan (you know there was a reservation about that), Mike DeBakey is very proud of the fact that the commission put its support behind him on that.

MC: He was one of the first members on the Presidentially appointed Board of Regents, long before I went there. And when I came ten years later, his imprint was still there. He had left quite a record of what the Library could do for the nation. And that's the story of that legislation. We then recruited some good people from NIH; Marjorie Wilson hired Dr. Carl Douglas to be her deputy. He was a tremendous administator, and the two of them built a small staff which developed the extramural program modelling ourselves exactly after the NIH program. It was so easy to do.

An interesting thing happened shortly thereafter. The House Government Operations Committee began a study on the reorganization of the Department of HEW. What grew out of that study was a recommendtion that lead to two events. One was that the National Medical Audiovisual Center, which was located in Atlanta, was transferred to NLM. Then, I am sure, Jim Shannon's fine Latin hand was involved in the second move; the National Library of Medicine became part of the National Institutes of Health. That move was opposed very bitterly by a number of leaders in American medicine, particularly lead by Dr. Stanhope Bayne Jones. He felt that in the long run that would not be a healthy move. He thought that the NLM would be submerged by the larger research entities of NIH. But when everything was said and done, the Library was transferred to NIH, with certain understandings. It was not to be treated as "the NIH Library" -- NIH had its own great library — but that it always be treated at least at the level of the largest institutes of NIH. Jim honored that. He put it in place and as far as I know, that is still the case; the NLM has exactly the same status as the National Cancer Institute and the rest of the Institutes.

SS: This is quite interesting in several respects: with respect to Dr. Shannon's leadersip, with respect to motivations for government reorganization, but one of the things this reminds me of is Mike DeBakey's telling me that, at an earlier point, Shannon was not even interested in having the Library on the NIH campus. He wasn't sure the Library belonged as part of NIH because the Library did more than research. I don't remember whether this had to do with geographical location only; that it should it be in Chicago or Bethesda, or whether it also had to do with institutional affiliation or relationships. Mike says that Shannon was disinterested in the possibility of having the Library be a part of NIH, and was maybe even opposed to it.

MC: I think that's probably correct for the late 195s. My recollection of the records that I have been privileged to see, and discussions with people at the time, would indicate that Mike's view is right. I know that Jim Shannon did not seek to have the National Library as part of NIH, but you have to remember that when all of that took place, Jim Shannon was not director. He was then Scientific Director of the Heart Institute. So he really didn't have anything to do with those decisions, but I think philosophically Jim would not have sought to have the NLM as part of the scientific apparatus of NIH. But I also believe it's fair to say that he changed his view of that in the mid-196Ø's, when he saw NLM develop the extramural program, intramural research was starting to take place in the NLM, and we began to show leadership in the field of computer science. I think he then saw that NLM was more like an Institute.

SS: The legislation that you had Dr. Wilson write surely didn't get into the matter of details of operations in creation of study sections, did it?

MC: It did not.

SS: But you nonetheless used the study section model.

MC: The legislation did one thing that had an operational effect: it said that for the review of grants the Board of Regents would serve as the Council serves other institutes. In other words, the legislation did call for that. But we introduced the notion that we should have primary review groups select study sections; that was not spelled out in the law as I remember it.

SS: One of the interesting things I've found is that while the peer review study section process is almost universally admired, nobody seems to know exactly where it came from; that is, as far as Ernest and others can remember, they just put it in place. There is the notion that it sort of stemmed from the wartime experience. There was no model outside that they knowingly brought in and said, "Let's do it like this". Similarly, nobody in later years -- the National Science Foundation, the National Endowment for the Arts and Humanities -- says that the NIH study section model was so wonderful that we took it and used it as our model.

MC: I have always credited Dr. Van Slyke and Ernest Allen as being those who established the procedures or mechanism. But I also assumed that a large part of that grew in part from the way the NRC did business during wartime. They essentially had study sections, so I thought it was a natural evolution.

SS: It seems to have been. I can't find any other example of how scientific review was done. Except in your case, where, at the Library of Medicine, you consciously and deliberately set about replicating the study sections for the fields you were going to be dealing with.

MC: And ultimately we integrated some of our grants with the existing study sections of NIH. There was a study section on the History of Life Sciences; there was no reason for NLM and NIH each to have the same kind of study sections, so we brought them together. In doing that, the NLM contributed the executive secretary. We actually supported that one.

SS: In your experience what were the disadvantages of being an "Institute" of the National Institutes of Health, as opposed to a separate bureau?

MC: I think there were no major disadvantages other than the conventional bureaucratic concern with having another layer introduced in the effort to achieve something. I can cite an example of a disadvantage that came from the reorganization. When the need for NLM to have an intramural research program was established, it became clear that we couldn't do what we wanted to do in a library facility. So we wrote a justification and began to carry the message that the Library needed a specialized facility in which it could do library system development engineering and communications research. We succeeded in getting the interest of a lot of people. The Board was strongly supportive; NIH did not oppose it -- they would always send our request forward. The Department was interested. We could not get support from OMB, but sooner or later the interest got to such a point that key members of Congress insisted that the Library needed such a facility. So we were invited then to develop our technical and appropriations requirements.

At that time, NIH had a lot of other needs; they wanted a new Fogerty Center Building; they wanted a new Child Health Building; they wanted new animal facilities, and in that context, the Library fared very poorly. Although NIH never disapproved our requests for construction funds, they always gave the Library a low priority. When I learned that we were being treated that way, I took a lesson from Jim Shannon (he was no longer Director then), and I bypassed the director of NIH and carried the message to higher levels. Ultimately we received the authority and the appropriation for the Lister Hill Center. That's an example where, if we weren't part of NIH, it would have gone to the Surgeon General's and to the Secretary without NIH interference. Otherwise, we paralleled the Institutes. In every sense we were treated in exactly the same way. I never felt, as members of the Board felt, that we were degraded or demeaned by the change from a Bureau to the level of an Institute.

SS: One thing that wasn't changed was the Board of Regents, or was it?

MC: It wasn't changed as a result of the reorganization, but I'm glad you raised that question.

I always believed that the basic statute that created the National Library of Medicine was written so carefully that no one should ever get into it and fool around with it, for fear that it would be weakened. But during the Nixon Administration, appointments to the Board of Regents declined for two reasons. One, the White House flagrantly nominated people with little or no qualifications to serve on the Board; they were political people: the chairman of Republican Committee in Morris County, New Jersey, or someone like that. They would never get Senate approval. It became very embarrassing, not only to the White House, but to the National Library of Medicine, that we were not getting new appointments. It got so bad that after three years we were down to one civilian member of the Board: Dr. Joe Volker, who was then President of the University of Alabama, Birmingham campus. He was Chairman of the Board, but he had no Board members other than the ex-officio members. At that juncture I went to the Congress and asked them to revise our basic statute to transfer the authority to appoint from the Office of the President to the Secretary. That opened everything up. That's the only time something like that happened.

SS: Who was Secretary then?

MC: I believe that Bob Finch was Secretary then. He was there maybe a year or two. His successor was Caspar Weinberger, and I think it was during Cap's term as Secretary that we got the law changed. And the quality of nominations rose again, and the Senate approved them all, and we were back in business.

SS: Otherwise, it stayed the same?

MC: Yes, it stayed the same.

SS: And does the Board act as the council in terms of reviewing grants, and no grant can be made which has not been approved by study sections, but must be approved by the Board?

MC: Correct. In addition though, the Board, unlike the Institutes, has the authority not only to review grants, but also contracts. We brought all of our contract actions to the Board.

The Board of Regents had been a powerful mechanism through which the Library received not only good advice, but good support. It's a group whose in-

terest in the Library has spread a sort of a good will in a general way. The Library, unlike some other parts of government, never really had any enemies in the U.S. The American Medical Association was always friendly to the Library; as was the ADA and other professional societies. It has a glorious history. It never had any antagonists until the late 1970s, when the success of MEDLARS was so great that the emerging foreign information industry became concerned. Their attack on NLM was led by a large Dutch publishing company which produced competitive products.

That Dutch group wanted us to do one of two things: They wanted us to establish a pricing structure for our services that would allow them to compete in the United States; that is, to add charges that would take into account profit. When we refused to charge for services on a spurious basis, they then challenged the right of the National Library of Medicine to provide any kind of computerized bibliographic services. And they did some fairly effective politicking within the Congress, within OMB, and even within the Department, trying to get us to cease and desist from running MEDLARS. That led to several studies. The Congress asked OTA to look into this matter and write a report.

SS: This was what year, or what period of time?

MC: This was in the late-'70s. OTA spent a couple of years studying the situation and their report said that NLM had the authority, was first in the field, was making appropriate charges for its services, and thus the OTA study generally supported the NLM. This did not satisfy our adversaries, and they then went to work with the executive branch, and through OMB and the office of the Secretary. The Secretary of HEW set up a study group, and they reviewed the same issues. In about 1981, a report was issued by the Department, which again reaffirmed NLM's legal authority, its operational capacity, and in essence supported the National Library of Medicine's programs to serve American biomedical science and health care. Those were mean, miserable years. The tension was pretty high.

SS: Did they get any political support?

MC: They got political support from one committy that had no direct relevance to health. It was a committee whose name escapes me that's chaired by Congressman Glenn English from Oklahoma, that has to do with telecommunications.

The information industry of this country also was engaged in a subtle attack on NLM because they felt that government shouldn't be providing these services. It's a matter of philosophy; they believe that if you create something successful like this then you should "privatize" it, turn it over to the private sector to run. So, the Library still has this issue to deal with.

SS: And in this struggle, where did the medical community fit in?

MC: The medical community was supportive of NLM's position, although it was not active. When we dealt with AMA, they came out on our side. At that time Dr. Leonard Fenniger was the head of their medical education program; he took the lead position and was supportive of NLM. There were other supportive professional scientific societies. The constituency that we served was always on the NLM's side. It was the new and expanding information industry that was on the other side.

SS: There were no lawsuits, were there?

MC: No lawsuits. It was all political. The only lawsuit that I can recall that the NIH and the NLM engaged in that involved Library affairs was the famous Williams and Wilkins litigation, where the Library and NIH both were sued by Williams and Wilkins because we refused to pay them royalties for the use of journal articles that we photocopied to respond to inter-library loan requests. That litigation lasted for about six years, and ultimately went to the Supreme Court. The Library and NIH's position were supported by the decision of the Supreme Court, which said that libraries are permitted to make single copies of articles for use in research and education. That was a long and costly litigation.

SS: You apparently decided, quite consciously, that you had to take a stand on this.

MC: Yes. We could have knuckled under. They were asking for a few pennies per page. I calculated that for NLM it would have been maybe less than $50,000 in annual royalties. But for the nation at large it would have been millions of dollars. And there was no legal basis for libraries being required to do this. So we really went to bat not only for NLM and NIH, but for the entire library community in the country.

SS: One of your functions is to get medical and scientific information passed on to the medical community, the medical practitioners. That obviously would have been an inhibiting factor if the cost had been significantly raised.

MC: Very definitely. That was one of the major arguments. We had the statutory base to do it; we felt that the dissemination of knowledge would be severely constrained. I can remember one of the justices of the Supreme Court asking the attorney for Williams and Wilkins a question. In essence he inquired whether a law journal article photocopy was an illegal document. The attorney replied that by preparing the photocopy he had actually violated the copywrite law. I could see that this was the beginning of our victory there, because the argument was that you just can't copy by machine; you could copy by pen, but not by machine. That argument didn't prevail.

SS: I wanted to ask you how direct a connection is there between the scientific work that goes on in the intramural or extramural program of the NIH or the Library? How quickly does information get to you, and do you use the same channels? Is it only when scientists author papers that information gets cranked in?

MC: By and large, the Library acquires its information through the acquisition and indexing of published materials. What a scientist at NIH generates is handled pretty much in the same way as a scientist at Georgetown or in Brazil; it is published. However, there are certain special links that provide the National Library of Medicine with information in other formats more quickly. For example, NLM has been involved with the NIH Consensus exercises from the beginning. It made a commitment to receive and distribute the preliminary and the final reports that result from the consensus meetings.

SS: What are consensus meetings?

MC: They are the special subject meetings that NIH organized about four or five years ago that deal with special subjects like congenital aberrations in children, or the latest treatment of coronary artery disease, or research in

dental care. NIH sponsors perhaps ten or more major meetings to which the public press, the scientific press, and the leaders in the field meet for two or three days and try to hammer out a consensus on what's the best current way to deal with a medical problem. They have been tremendously important and successful exercises. So, the Library is engaged in that sense, knowing what NIH has identified as a big issue and what they're trying to communicate. Then NLM distributes these reports promptly to libraries throughout the world. They are very brief but very important summaries of the meetings.

SS: Do those summaries identify key scientists and physicians involved in case further inquiry is needed?

MC: Yes. And further inquiry usually goes back to the sponsoring Institute. The other thing that the National Library of Medicine has in the way of an advantage over almost any other library, (except for the Library of Congress) is that we receive materials from all over the world. NLM doesn't make up separate orders for selected books and journals. There is a standing order to world publishers to send anything that has to do with health and medicine to NLM. If we keep it, we'll pay for it. If we don't keep it, they get it back. In that way, the Library has a river of infomration flowing through its doors. That's why it is the most comprehensive medical collection in the world. It's because we don't let the librarian decide what's important in medicine or biochemistry. We take it all and then let the review groups and scientists examine our titles, and decide what's important. In this context, NIH contributes to the NLM by having some of its experts sit on committees to decide what are the best journals in a given field. Of course, NLM also uses outside consultants. It's no longer an internal decision as to whether one journal gets indexed in depth right away, while another journal doesn't. That's done by experts from the biomedical community.

SS: So you have automatic acquisition, and a subsequent sorting out process.

MC: Right. NLM acquires everything and organizes it to preserve as well as disseminate it. It's divided into highly substantive, new creative, high quality work. That literature gets treated in depth rapidly, and then less important materials are indexed at a slower pace.

SS: How do the consensus means differ from what the Cancer Institute has been doing for a very long time; that is, annual or biannual meetings where researchers present their findings directly to the press? That's more promotional, isn't it?

MC: Consensus meetings differ insofar as the target audience is different. There is one specific question to be dealt with, and if it's a controversial issue, all of the best minds, from at home and abroad, are brought together to deal with it in a public meeting. Consensus meetings are farther down the knowledge pathway than research reports. A consensus is sought after all the research is done and they examine it to determine the state of the art. I have not attended any of those recently, but they were extremely successful, and I guess that they still are. I see them reported in the Journal of the American Medical Association and other journals, more or less as prescriptions for what is high quality, modern treatment. It's the closest that NIH gets into the treatment business; it's close to being out there influencing patient care.

SS: One of the recurring questions over the years, particularly beginning in the '60s, has been whether NIH and, I guess by extension the Library of Medi-

cine, moves quick enough to get new medical information in the hands of practitioners. You remember that visit of J.B.J. to the Bethesda campus, when he asked, "Are secrets still locked up inside the laboratory?" That caused quite a fuss. This can't be just a response to that. If so, it took a long time to get it going.

MC: I don't think it's related to that pressure, nor to the pressure that Hubert Humphrey generated, which was similar to Johnson's. Namely, are there secrets on the shelves of the Library on treatments that have never been pulled out.

SS: Did that have to do with thalidomide?

MC: Yes, it came after the thalidomide business. I am sure that if we all had sufficient time and could browse through great library collections we could discover things that are applicable today, but the cost and enery of doing that would often, in my judgment, be greater than doing the experiment from scratch. Sometimes it's cheaper to do a new experiment than to find out whether it's ever been done before!

SS: I'm sure that's right. I do think, on the other hand, it's interesting that this consensus process you described is a latter day device. One would have thought that it might have been conceived of long before 1980.

MC: I'm guessing it started in '80. When you talk to your friends at NIH you can get the precise date, but I know it's been going on at least five years, and possibly more.

SS: It sounds immanently sensible, and not too difficult to arrange.

MC: It takes a lot of planning to be sure that the questions are well identified and that people come dealing with the targeted quetions, and not just trying to get up and make speaches.

SS: But isn't it fair to say that in NIH itself (not the Library, of course) there was always a concern, almost a reluctance, to do too much on the dissemination side.

MC: Yes, there was always a concern that premature release of information could do damage, if it weren't information that had been tested carefully or checked out. That was Jim Shannon's argument with Hubert Humphrey when they were talking about this; yes, you could get information out earlier, but it may not be verified and certified, and so you've got to strive for a balance.

SS: Also, is it the rule of the research sponsoring organization to be the research information disseminating organization? Does that role put pressures on the scientific community. Of course, the Library has picked all that up now.

MC: There is an interface there. There are even technical links. For example, the National Cancer Institute uses a library computer network to disseminate some of its specialized information. There are protocols for treatment of various forms of cancer which are put up on the NLM network and their PDQ system is a good example that the Library has worked with other institutes in the same way. I think it's been a good think for the Library to be in the NIH scientific community to remember that research is really not completed until it's published.

The Library seeks to see this knowledge disseminated. Lyndon Johnson assumed scientists did not disseminate new research findings.

SS: He himself didn't come up with that notion, did he?

MC: I don't know who fed it to him. I have no idea.

SS: There have always been people who were medical research activists and dissemination activists, I suppose.

When you took over as director of the NLM and asked Marjorie Wilson to draft legislation to extend the scope and authority, did you have very specific long-term, far-reaching objectives in mind? Did you set out to make the Library of Medicine the most important medical research institution in the world?

MC: Well, if I did, I didn't state it in those terms, but I did have three objectives, which I stated to the Board of Regents before I officially took on the job. I told them I thought there were three things that needed to be done. I could restate them clearly now only because I have been reviewing the minutes of the Board in preparing a paper for the sesquicentennial. My memory is not that good. I thought that the Library had to do three things: it had to acquire, I estimated, $100 million to upgrade the nation's medical libraries which were overloaded. Science had grown faster than libraries could keep up with the literature, and that led to the justification for extramural programs. Secondly, we could not improve library operations unless research was performed. We had to do something to introduce new information methods, and we had to do studies to understand the existing library system. I thought that the library needed to have an intramural research program. And that led to what I described as the effort to get the Lister Hill Center, which was achieved. The third goal was to introduce into the Library disciplines other than those of the library profession. And when I left NLM about half of all the professional positions in the Library were held by non-librarians: chemists, engineers, physicians, nurses, dentists, historians, not to mention computer scientists. So, for the first time we had, within the institution called a library, something which was much broader than a library. We really had an active information communications center.

I was often asked by committees of Congress why we held onto the name "Library" when a library was just a place where you keep books! I suggested that you could either change the image of the Library, which is what we were trying to do at NLM, or you could change the name of the Library to something else." But unless you change what a library did, whatever you call it wouldn't change the way you delivered information. I think we kept the name "Library" wisely, because it had been there for over a century.

SS: Certainly.

MC: Those were my goals and objectives. I can tell you that in reaching those goals and objectives the key to success was not simply getting more money from the Congress; it was bringing into the Library, not only Marjorie Wilson to start the extramural program, but also Dr. Ruth Davis, who I recruited from the Defense Department to start the intramural research program. She is a brilliant applied mathematician who worked in highly sophisticated technologies, with satellite communications and robots -- all the things that DOD could afford to do in the advanced mode. We brought her into the health arena and she wrote the

prescription or plan for the NLM research program that we lived on for a decade. She was so successful, as was Marjorie, that I lost them both. The President's Science Advisor called to say, "I'm taking Ruth Davis, and I wanted to give you the courtesy of telling you that she's going to go the National Bureau of Standards to create a new Institute of Computer Science. It was a compliment that we had somebody like that. We also brought in Mary Corning, who was a physical chemist with a distinguished background at the National Science Foundation, and put her in charge of our international programs which were highly successful.

What I'm trying to say is not that the Library was prescient in realizing that women can do great jobs; we were lucky to get three women who were tremendous technical and administrative leaders. The decisions that put the Library on the map resulted from bringing in new kinds of skills and talents.

The other thing that I would like to introduce here is that the Library was founded on a tradition that encouraged new developments. John Shaw Billings was just phenomenal as NLM's first Director. You may have gotten a taste of that last night, in the fact that he would move into Ford's Theatre and make a library there after Lincoln's assassination. But he did so many other things. He was one of the founders of the Cosmos Club. He was the person who not only created the intellectual plan for the new Johns Hopkins Medical School, but he also designed the facilities. He was the chairman of the board of the Carnegie Institution of Washington. He created the first School of Hygiene and Public Health at the University of Pennsylvania. He was a universal guy; many remember that he created the first Index Catalogue, and the Indicus Medicus, so he is viewed as a genius librarian. But he was more than that. He was a genius organizer and social manipulator. He had one foot in medicine and one foot in the library, and he was the model for everything that has followed at NLM.

My immediate predecessor, Frank P. Rogers, was a similar kind of guy: he was a great thinker; he knew both sides of the equation. I attribute the strength and the current posture of NLM to that kind of leadership in the past. If you're part of a dead organization in the past, it's pretty hard to come alive. But if you're part of a live organization, you're sort of driven. I just can't resist telling you that. It certainly motivated me.

SS: That that was the tradition, and those were the great examples of the past to have in mind.

In a certain way, the NIH itself, particularly the grants program, was less conscious of its potential than a decade later when your predecessor and you were about the potential of the Library. Of course, medical science had just burgeoned in that period, and keeps on doing so. When I approached Mike DeBakey, I said, "Would you talk about the role of the National Library of Medicine as the national library of medicine?" and he started talking about it immediately as the library of medicine of the world. That's what it certainly is. What about the role of the Library in building up the capacity of medical information communications throughout the country? I take it that was one of the most important ingredients of your legislation of '65.

MC: Let me say that $100 million I thought we needed to build up a new infrastructure in medical libraries around the country has long gone by. It's now over $150 million that has been spent for Library programs. I guess maybe some 15 or 16 new libraries were built. We trained hundreds of information specialists who heretofore might have been journeymen librarians. They are now tech-

nical information specialists working in the library community. NLM even supports clinical medical librarians who go around with doctors and nurses providing bedside information.

The creation of the regional medical library network was an outreach program second to none. For the first time, literally, the doctor in a small, isolated community could reach into this vast data bank and get the same information as the physician in the big city could get. The intramural research program at NLM demonstrated how to reach out to Alaska, and provide health care information to the remote villages. The Indian villages were served for many years by NLM in that way. It was done by working through the University of Washington in Seattle, in the western consortium of universities. The library was engaged in a real way in delivering information that was used for patient care, for education, and not just for research. In 1960 the library was used about 80% for research and 20% for everything else. This has changed considerably by the improvement of the services brought to the physician. Now I'd think that NLM roughly supports service to science, education, and practice equally. It's the increase in support of practice that I think has the hidden impact that we all hope to achieve.

SS: Wouldn't you say that in a way that's the most important of the elements that public officials respond to? Wasn't that more than research on computer science or information? I mean, that's the practical thing that Fogerty and Hill and others were getting at.

MC: That is really what they wanted to get out of the Library, and that's now what the Library is delivering.

SS: Obviously they knew it had to be linked to the science and research enterprise.

MC: And to the practice community as well.

One other thing in that context that ought to be mentioned is that one of the things that NLM did that NIH didn't do, and that I believe NIH should have done, was to immediately engage the community that is now concerned with medical "informatics". NIH had a marvelous program run by Scotty Pratt in computer research and technology activity on campus. Scotty brought together good equipment and good people, and did a lot of good intramural research. But it didn't have an extramural extension. NLM, with a small budget, really encouraged training of health professionals in the use of computers, and set up some pretty significant training grants in this area. This is the field where Don Lindberg made his reputation in Missouri; he was one of the pioneers in that area. And we also set up program research grants, along the NIH mode. We were the major program supporting the application of computer science and technology to health care. That was a seriously significant move on the part of NLM. We went to other Institutes at NIH and "passed the hat" trying to get their money into this area, but we failed. Even in the National Institute of General Medical Sciences, which would have been a logical place, we still carried the major load without help.

SS: Of all the information distribution mechanisms and programs helping the practitioner, is the Alaskan example the most dramatic and the most important?

MC: I would say it is the most dramatic, but I wouldn't say it's the most important. The most important contributions that we've made to assist health

care delivery have come through the provision of specialized information services to physicians in their offices and in the hospitals: the MEDLARS family of services -- not just bibliographic citations, but some of the specialized information from toxicology and chemistry and the other special data bases. Bringing it to the doctors' offices has, I think, been very profound.

SS: How widespread is that?

MC: Approximately 1,800 hospitals are now part of the NLM network, and I don't know how many thousand doctors participate. I've now been away from it for two years, and I haven't kept up with the statistics, but I can tell you this: in 1984, when I left, more than two million computer searches were performed that year for physicians and scientists. Two million computer searches! It must now rank among the largest of the open information systems. And those services are not given away; they are sold and paid for. I think that is a measure of the success.

SS: I read that in 1985 it was up to three million.

MC: Could be.

Now, the other thing that NLM does which impacts on the practice of medicine is generating an Abridged Index Medicus, using a selection of literature that's all in the English language and represents the "cream" of the clinical journals. They are indexed and produced in an abridged version, so that if the family physician wants to know something about the latest treatment of kidney stones, he doesn't have to go through the big bulky Index Medicus. He can go through the abridged version easily.

NLM also added something that doctors wanted that we didn't have before: namely, abstracts -- not just a reference, but a good clear English language summary of what the articles contain. That's been a powerful asset.

SS: Can any physician in the country subscribe to this system in any range he wants?

MC: Any physician can subscribe, as can any lawyer, historian, engineer -- any professional.

SS: You may remember from that first meeting of the Friends of the Library of Medicine that Paul Rogers said that he foresaw the time when, if a family wanted to have a computer terminal and program in their home that was hooked into the Library, that would be feasible, and he seemed to thing that it was desirable.

MC: I think it would be feasible, but I don't know that the information that NLM has can be read and understood by the ordinary citizen. I think that it's a two-edged sword. Whether it's desirable I'm not sure.

SS: One has to have a professional, not just a personal or avocational interest in this to subscribe, I assume?

MC: Yes. You wouldn't want to spend a couple of hundred dollars per year for something that you didn't find useful.

SS: Is there any prohibition against, say, if I wanted to subscribe?

MC: No. The Library would be glad to take your money. And I know there are science writers that use the service. But you don't even have to subscribe. If you want to, you can go in and out on a one-time arrangement. A computer program is written out so that it's like making a telephone call; when you get through it says, "You owe $1.85 for two minutes," or whatever the current rate is.

SS: What do you foresee? If we're just around the corner from the possibility of having an NLM connection in any home, I wondered if at some point there might not be some prohibition.

MC: I think the National Library of Medicine is the wrong institution to engage in what I would call, "public health education". But I think this function needs to be done, but done by a different part of the government. Area health education centers are set up to do that sort of thing; the Public Health Service at one time had an appropriation of, I think, $10 million to do this. Dr. Arthur Osborne and others were engaged to do it, but that's a job that ought to be done by people who translate accurately the results of biomedical science for the public; not for the National Library. I would oppose it as an appropriate task for them. It would overburden the NLM apparatus and tear it down. But I think there is a place out there for it.

SS: What, then, would you envision as future dimensions for the Library?

MC: I think the Library should continue to seek more efficient, effective methods of disseminating the kind of information it handles now, and it should engage the new technologies that are available, like optical disc technology, and compact disc technology, for the storage and retrieval of information. I am saying that as we use a computer to upgrade the way we did business in the early '60s, we now need to use these new modalities of communication for transmitting information.

One of the big problems that the National Library faces, that all libraries face, is that the paper is disintegrating. I the last century, probably 15-20% of all the documents in all libraries are brittle, they're brown, and so fragile that if you handle them they will fall apart. One of the new tasks in preserving information, whether it's scientific, educational or cultural, is to introduce better preservation techniques. The Library of Congress is investing around $10 or $11 million in developing a system for dipping its books into chemicals that will preserve them. It's going to take many years to catch up with their backlog!

NLM is engaged in research to use the new optical disc technology mechanism for getting images stored in a more permanent form. That's the kind of thing that I think NLM needs to do. But the other thing it needs to do, in my view -- and I think that Don Lindberg is emmanently qualified to do it -- is to teach the new members of the profession how to acquire library information; how to reach in directly without an intermediary. The librarians may feel threatened by having somebody come in and get what they want without going through the reference desk, but when that happens, I'd say the Library has succeeded. When we closed out the card catalog at the National Library of Medicine, with ten or twelve million cards, it was a sign of success. It meant that a whole revolution has ended. We now have all that precious information in a more compact form, more easily accessible. So in a way you're driving yourself out of one form of business, but going into another form.

SS: Are we then at a plateau in the delivery of services to medical practitioners, so that now we need to concentrate again more on the research and education training side?

MC: If the Friends of the Library are right -- and I can't tell you for sure if they are or not -- that there are doctors out there who don't know about the National Library of medicine, then we're not at the end. We've got to do the job of letting them know what's available. I know that's a problem, but I don't know how big it is. On the other side, I think the question really is: does fast-moving medicine need more than citations, abstracts and full text? And I think the answer to that is yes, it does. I think people now are seeking answers to questions, and they don't want to go through a bunch of articles to find out how to treat arthritis in a 45-year old male. They want to have it boiled down authoritatively. This is where artificial intelligence systems can contribute new approaches.

SS: Dr. Cummings, thank you very much for all of the valuable information you have given me. This will be immensely helpful in my compilation of NLM's functions and contributions.

Curriculum Vitae

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PRESENT POSITION	Director Emeritus, National Library of Medicine Consultant, Council on Library Resources
BIRTHPLACE AND DATE	Camden, New Jersey, September 7, 1920
EDUCATION	B.S., Bucknell University, 1941 M.D., Duke University, 1944
HONORARY DEGREES	Doctor of Science, Bucknell University, 1969 Doctor of Science, University of Nebraska, 1971 Doctor of Science, Emory University, 1971 Doctor of Humane Letters, Georgetown University, 1971 Doctor of Medicine, Karolinska Institute, Stockholm, Sweden, 1972 Doctor Honoris Causa, Academy of Medicine, Lodz, Poland, 1977 Doctor of Science, Duke University, 1985

EXPERIENCE

1984-	Consultant and Member, Board of Directors, Council on Library Resources
1964-1983	Director, National Library of Medicine
1963-1964	Associate Director for Research Grants, National Institutes of Health
1961-1963	Chief, Office of International Research, National Institutes of Health
1959-1961	Professor of Microbiology and Chairman, Department of Microbiology, University of Oklahoma School of Medicine
1953-1959	Director, Research Services, Veterans Administration Central Office
1953	Associate Professor of Bacteriology, Emory University
1949-1953	Chief, Tuberculosis Research Laboratory, Veterans Administration Hospital of Atlanta

EXPERIENCE (cont.)

1948-1953	Instructor through Associate Professor of Medicine, Emory University
1947-1949	Director, Tuberculosis Evaluation Laboratory, Communicable Disease Center, U.S. Public Health Service
1945-1947	Assistant Resident, Medicine, Boston Marine Hospital
1944-1945	Intern, Boston Marine Hospital
1942-1944	U.S. Army (ASTP)

PROFESSIONAL ASSOCIATIONS

Fellow, American College of Informatics
American Academy of Microbiology, Inc.
American Association for the Advancement of Science, Board of Directors
American Board of Microbiology
American Clinical and Climatological Association
American Federation for Clinical Research (Emeritus)
American Osler Society, President
American Society for Clinical Investigation (Emeritus)
Duke Univesrity Medical Center, Board of Visitors
Gorgas Memorial Foundation, Board of Directors
Institute of Medicine, National Academy of Sciences
Medical Library Association
Royal Society of Medicine, London, Fellow
Society of Sigma Xi
Washington Society for the History of Medicine

SPECIAL AWARDS AND HONORS

Veterans Administration Exceptional Service Medal, 1959
DHEW Superior Service Award, 1966
DHEW Distinguished Service Award, 1968
Distinguished Alumnus Award, Duke University, 1969
Honorary Member, Alpha Omega Alpha
Honorary Fellow, College of Physicians, Philadelphia, 1973
Rockefeller Public Service Award, 1973
Honorary Member, American Medical Writers Association, 1974
Honorary Member, Academy of Physical, Mathematical, and Natural Sciences, Venezuela, 1974
Alumnus Membership, Phi Beta Kappa, 1974
Modern Medicine Distinguished Achievement Award, 1976
Distinguished Service Award and Honorary Fellowship, American College of Cardiology, 1978
Honorary Member, Academy of Medicine of the Institute of Chile, 1978
John C. Leonard Award, Association for Hospital Medical Education, 1979
Harold Swanberg Distinguished Service Award, American Medical Writers Association, 1979

AWARDS (cont.)

Fellow, American Association for the Advancement of Science, 1980
SES Outstanding Performance Award, 1981
Abraham Horowitz Award of the Pan American Health Organization, 1983
Special Recognition Award, Association of American Medical Colleges, 1983
Honorary Fellow, New York Academy of Medicine, 1985

PUBLICATIONS

108 scientific and historical publications
Co-author of textbook in the field of tuberculosis (with Stuart Willis), Laboratory Diagnosis of Tuberculosis, Charles C. Thomas Company, St. Louis, 1952
The Economics of Research Libraries, Council on Library Resources, Washington, D.C., 1986

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