Oral History of Dr. Stanley Rapoport

GM: Today is March 19, 2021, and I'm about to interview Dr. Stanley Rapoport who for many years has served at the NIH. We'll be talking about some of his contributions in the science of medicine a little later. He served as the Chief of the Laboratory of Neurosciences for almost 30 years. It happens that in 1965, about 56 years ago, Dr. Rapoport had volunteered to go to Bogalusa, Louisiana, to observe, evaluate, and report back about the status of medical care for the members of the Black community. Dr. Rapoport is here with me today and we're anxious to hear his report of his investigations at that time. We're recording this discussion over Zoom. I thank you, Dr. Rapoport, for your interest and for stimulating this marvelous oral history. Let's start out by hearing about your background, where you grew up, a bit about your family, your community, and how you chose medicine as a career.

SR: I was born in 1932 and grew up in Brooklyn, New York. My parents had come here in 1928 from Poland, via London. I was a child of the Depression. I grew up in a wonderful multi-ethnic community in Flatbush. The school system was wonderful; I went to a public school; and I went to Midwood High School that had just been created in 1940. My life in retrospect was ideal and normal. I liked science. I suppose the two major issues which affected it was, first, growing up during the Depression and realizing the poverty that was occurring there, and then the effect on our lives of the Second World War and the loss of contact from people, including my grandmother, in Poland and Germany and I think that influenced my parents a great deal.

I liked Midwood High School very much. It was open to a lot of ideas. I fell in love with chemistry. I read a lot about biology and the history of Louis Pasteur and the great contributions of scientists in the 19th century. I did well and then I graduated and left Brooklyn when I went to Princeton University on a scholarship. I was the first student, I think, from Midwood who went to Princeton. The Ivy league schools were opening up to Jewish students. I did get a scholarship at Princeton; I got a Westinghouse honorable mention which helped me and that was my life.

My experience in meeting people who were minorities was present. When I was at high school, I did work at the several places where I interacted with Black people and my father worked and so I think we were brought up in an open environment where the issues of race were—I was aware of—but were not terribly compelling for me to think of at that time.

GM: I think you majored in chemistry at Princeton from 1950 to 1954. Does that sound right to you?

SR: Yes, I majored in chemistry. I actually focused on physical chemistry. I was very influenced by the professor of physical chemistry Walter Kauzmann to go into research, but I did minor in liberal arts courses. I ultimately decided I was going to medical school and so I wanted to take as many liberal arts courses as I could in English, art, music, history, and that really was terribly important for the rest of my life.

GM: That's good. Then you went on to medical school at Harvard.

SR: No, no. Actually I had a Fulbright scholarship. I was accepted to medical school at Harvard. But I had competed for a Fulbright scholarship, so I actually went to France from 1954 to 1955 and studied French literature and philosophy at the time, in Grenoble. And that sort of started out, or continued, interest in French which essentially even sort of got my son interested in French and he's currently a French citizen and married a French woman and living in France.

GM: Okay and then you completed your studies at Harvard. You had an internship for a year, I gather,and then got to NIH. Is that how it worked ?

SR: That's right. I did four years at Harvard. Relevant to this discussion, I remember in my third year I took a course in Public Health which I liked very much. Then I did an internship in Medicine at Bellevue which really got me in close contact with the effects of poverty and discrimination on health. Then I had two years of doing my military service at the NIH in their Laboratory of Neurophysiology.

GM: Was that under the Public Health Service at that time?

SR: Yes, that was. We were all in the Public Health Service. That was our two year's equivalence.

GM: A number of young researchers were coming in at that time under the Public Health Service.

SR: A large number of physicians were coming through the Public Health Service into the NIH at that time and a lot then went on to either stay at the NIH or to do research elsewhere.

GM: What did you do at NIH the first couple of years?

SR: The first two years I was assigned to Wade Marshall's laboratory. He was the head of [Laboratory of] Neurophysiology. I worked on a subject called "spreading cortical depression" which was a model for epilepsy. I measured pH of the brain and did some physical chemistry. The last six months I had free and that's when I got involved in testing and looking at the blood-brain barrier. I created a way to look at blood-brain barrier integrity and then dropped it until many years later.

GM: We'll come back and discuss that because I'd like to elaborate a little bit more later. Now I understand you ended up at NIH in 1964, volunteering to visit and do this evaluation in Bogalusa, Louisiana. How did that happen?

SR: Well, after my two years there was a rotation, so I and my wife got fellowships in Sweden and we were in Sweden very far away from the social changes and the events that were occurring here in the United States. There was the Kennedy assassination, the Bay of Pigs, but the main thing in civil rights was there was a '63 bombing in Birmingham [September 15, 1963] and the '63 March on Washington [August 28,

1963] and we saw this at a distance. We were not intimately involved but we were aware of these events. In 1964 we came back. I got a tenure track position at NIH in the laboratory, and we wanted to get involved in what was happening in the country. We went to a meeting held by somebody in the Medical Committee for Human Rights. At that point he was discussing—the Medical Committee for Human Rights had been formed in 1963 to provide medical service to the marchers in Washington. In 1964, it was involved in supporting activities on voter registration in Jackson, Mississippi—the Jackson Mississippi Summer. The representative there said that in '65 it wanted to expand in Louisiana (after Mississippi) and establish some sort of medical presence in Louisiana. But they didn't know much about Louisiana and they were looking for somebody who would go down to Louisiana and essentially evaluate the medical needs and the status of discrimination there. I volunteered to go down and, yes, so that's how I got involved in Louisiana.

GM: At that time as a Public Health Service individual.

SR: Well, I volunteered but then I realized that I was in the Public Health Service and President [Lyndon] Johnson at that time did not want to send government officials to the South. The Civil Rights Act had just been signed. Title Six indicated that "separate but equal" was no longer valid for organizations or institutions that were receiving government funds. So I needed official approval to go down. I applied in September of 1964 to the NIH to go down and I got approval finally at the end of March the following year.

GM: Who had to give that approval?

SR: Well, first my laboratory chief, Wade Marshall, had to approve it and he was quite liberal; then the Scientific Director of the NIMH [National Institute of Mental Health], Dr. [John] Eberhart, had to approve it both in principle and realizing all the time that this was not a government priority; and finally the Director of NIH also had to approve this. It took some time for me to convince them and them to convince each other that this would be a worthwhile endeavor. When I did go down, they pointed out that I must just do [a] purely medical survey of poverty and discrimination and not get involved as an overt representative of the NIH. That was an agreement we made.

GM: I have a book here in front of me called The Good Doctors by John Dittmer, which records a lot of the events of that time. There's one quick paragraph I will read to you about this program, which I think kind of sets the stage. It says here: "The center of Black protest activity moved from Mississippi to Louisiana"—this is in a chapter of the summer of 1965—"which became the nation's hot spot in the summer of 1965 with CORE [Congress of Racial Equality] activists battling white supremacists in the Ku Klux Klan." And it goes on to tell that Bogalusa, which is where you went, was very, very threatening, and it was kind of the center of all the activity of that particular summer. That's where you went and that's what you got involved in, so you were right in the middle of all the things that happened. So tell us then about your experiences in Bogalusa.

SR: Well, actually Bogalusa—Southern Mississippi, around Jackson and Philadelphia, was where the three students had been killed in the prior year in June. It was the center of the White Knights of the Ku Klux Klan, which was thought to be the most virulent, violent group of Klansmen. When I came to Bogalusa, I was unaware of the crisis that was going on. Bogalusa was a city of about 20,000 people; it was essentially

established after the Civil War and after Reconstruction in 1904; it became a paper mill town. The Black community that was there had come just at the beginning of the 20th century and had formed a very strong Black union and after the Second World War, a Voters League, so it was a very cohesive group of people. It also was a place of incredible violence..

CORE came in 1964 and decided to a) desegregate the lunch counters and b) to register voters in 1965. And the city didn't want to do that, nor did the governor want to do that. And when the Black community decided to accept CORE workers as well as students from Kansas City to participate in their protests, they realized that it was just too dangerous for the students, and they formed—just about one week before I came and I was unaware of it until later—they formed the first armed resistance group of Black people in the United States, called the Deacons for Defense and Justice, and that group broke off from the Voters League. Essentially it was trying to protect the students who were going to come down.

I came to Bogalusa not knowing this, just after the Deacons had been formed, and so there was so much violence going on. People were being killed and shooting at each other, and I walked into this. I had this goal of writing this report for the Medical Committee and these people had to then take care of me at the same time that they were preparing demonstrations. So I walked in when people were shooting at each other in the streets, and I had to do my report. They pointed this out. I lived with a Black family. It was very, very dangerous. Bogalusa and Jonesboro were the two centers where the Deacons formed as a protective defensive force.

GM: Who were you to have reported back to with your findings?

SR: The Committee, the Medical Committee, and practically to CORE, but I was really communicating with the Director of the Medical Committee in New York, and in communication with lawyers for CORE and with people from CORE in New Orleans. For example, when I flew into Bogalusa on the 30th [of March 1965], the day after my travel orders were prepared, before somebody drove me to Bogalusa, we went to the CORE office in New Orleans, and they helped me get oriented. They told me whom I was going to stay with. They essentially set up a communication base where I could call them up in case of need and they, in fact, told me at that point that the situation was very dangerous—only at that point. Yes.

GM: So you moved in with this Black family.

SR: I was taken in to live with this Black family, the Hicks family. [Robert] Hicks had just been elected President of the reorganized Voters League. Hicks was President because the Voters League had been separated from the more violent and resistant Deacons.

GM: Sounds like a very troubled time, but were you threatened at all living with a Black family?

SR: I wasn't but they probably were. I was taken care of by the Black family and protected. Everybody had guns when I came. Everybody had shotguns and I felt a little beyond this. I was a White doctor who came down. I was going to just do a report and they just told me to be careful. I spent a lot of time interviewing Black people who were complaining about the health system. I was told a lot about the health system. Then they had a taxi service by A.Z Young, I mentioned him, which took me to various sites in the city, the

Charity hospital, the Desportes Clinic to visit and talk to doctors at night and during the daytime and I just collected interviews and data and investigated the segregation or absence of segregation.

GM: Would you describe what it looked like when you walked in these places?

SR: I really walked in in a sort of naive open way. I identified who I was, I asked doctors how they felt about segregation, I asked them whether they supported segregation. Several of the physicians were from the North and said that they would be very happy to be desegregated but nobody wanted to be first because the Klan was not only targeting the Black community, but the Klan was also actually targeting the White community, the people in the community who would essentially compromise and deal with the issues. Sothe Klan was active and several of these doctors just were afraid to, would not essentially jeopardize their jobs doing this.

Now one experience was I suppose a critical experience. I walked into the key hospital that I was interested in, the Charity hospital, Washington- Saint Tammany Charity Hospital, that had been built in 1951 with Hill-Burton funds and was clearly subject to Title Six of the Civil Rights Act. When I went into the Charity, I made an appointment to talk to the superintendent. I told him who I was and told him that I'd like to visit the hospital to look at their compliance with desegregation in Title Six, which was a little outrageous on my part. I really didn't have the authority to do that, but I acted as if I did. He got very upset—I remember Mr. Lee Brown—and asked me to leave. He said I had no authority to do that and that they were complying with the rules. And I left.

But I had to see the Charity because that was the major point of complaint. I went the following day back to the Charity, but this time protected with a Black Deacon because my hosts were starting to worry about my vulnerability because I had identified myself. That's when I visited the Charity and went to the wards and saw that it was clearly segregated and non-compliant. The Black wards were like the worst wards at Bellevue; they were filled, dirty, not air conditioned, people were just lying there. The White wards were much better. Then I was told that at the Charity they treated the Black patients inappropriately, they called them by their first names, they would come to the clinic and be ignored despite their priority. There was a bitter resentment of the Black community against Charity. So I saw that and then I wrote it up.

The other clinics had not been built with Hill-Burton funds. They came into play after Medicare was passed the following year because then they started receiving federal funds and they were all segregated. But as I went talking to people, I became aware that I was being followed, literally followed in the streets. At a certain point the Black host said, “You really can't be walking alone anymore. You need protection.” And that's what happened.

GM: That's a pretty terrible, difficult way for the Black people in the community to have to live. Was that a constant problem for them?

SR: That was their daily lives. This was a problem of poor sanitation, of violent attacks on them, people were being beaten up. It wasn't only the Klan, it turned out that the police department were virtually all members of the Ku Klux Klan and worked with the Klan in preventing any political action by the Black community, beating people up, killing people on the road. It just was so unimaginable for me who came from the North to suddenly get in this community where your worst nightmares were occurring on a daily

basis and these people were dealing with this, with their children, with themselves.

And yet I tried to keep a distance and separate up to a certain point and consider this purely from a public health position and talk to the White community and find out that many in the White community were willing, in fact wishing, to get this settled. For example, one of the people I communicated with was a minister at the church. Reverend [Bruce] Shepherd, who accepted me and told me about whom in the White community I could talk to and about how hard he was working with the Black community and getting a social worker and a nurse coming down to deal with these issues. There were people who were quite aware and liberal. But this man had been firebombed in his own church and later I found out was forced to leave and he ultimately became the reverend at Duke University. That happened to the head of the newspaper, that happened to a lawyer, so those people who actually were capable of working something out were so concurrently intimidated. I became aware of the whole social structure. The Black community, they were just locked in there terrified, and ultimately because of leadership of three or four people, women and men, they decided to form this armed resistance and deal with the issues.

GM: Were they so locked up in their employment in Bogalusa they couldn't just pick up and leave?

SR: Well, it's hard. One of the problems in Bogalusa was that after the war there was enormous emigration North of young Black men, leaving these distraught dysfunctional families with a mother and two children. So after the war, because of this work [situation], they had lost the presence of young Black men and the families became so dysfunctional and dependent. Bogalusa is unique because it was not a plantation place, it had no antebellum history. It had this paper mill. It was all around the paper mill, and everybody worked at the paper mill and they had jobs that they weren't going to lose because the paper mill was actually owned by proprietors outside of Bogalusa. And so everybody had a job. So that was the major employment, and it was hard getting a job in 1960. They had good jobs; they belonged to a union; and where would they go? I mean, where would these people go? Many young men had left, and the rest were just there, being terrorized by this society and the Klan. You don't leave the South. I'm still amazed that even after all of this, everybody who could stay in Bogalusa, did stay in Bogalusa. It's a real identity with that environment, with Bogalusa.

GM: Let's go back to the hospital setting. I'd like to hear a little bit more about it. Did you learn if they had any credentialed Black doctors or Black nurses, or would you see only White doctors?

SR: I'd spent some time at the NIH library going over Louisiana and I also had been sent material by the Medical Committee. There were no Black doctors; there were no Black nurses; there were no Black social workers; there were no Blacks in authority. It's an interesting story because after visiting Bogalusa, I went down to the state health department in New Orleans and talked to the head of the health department, [Doctor] Ben Freedman, and he had written a number of papers on public health in Louisiana. Louisiana apparently had the charity system which was set up in the 18th century, I think, by Frenchmen. It also had incredibly advanced public health service. It was the first in so many aspects of public health and the public health was very strong in Louisiana. It just started failing and so they had public health nurses, they had, like, several hundred doctors in public health, they provided support to the poor people. Huey Long was involved in the charity system in the 1930s. They had a really good tradition, and they were first in many areas.

But after the war [World War II], somehow public health deteriorated. What [Doctor] reedman said was that before, everything was controlled by the Department of Public Health, and then it got compartmentalized amongst different institutions, and then they were introducing Medicare. The AMA was very against Medicare and private health facilities were against Medicare in Louisiana. They even got Ronald Reagan to go on television to be against Medicare and somehow the public health just lost support. And so, the staff went down; the need went up.

Additionally, the Klan was intimidating the Black personnel. They had Black public health nurses before the war, and immediately after the war the Klan was intimidating Black public health nurses or social workers in the rural areas. So public health regressed to staying only in Shreveport, Baton Rouge, and New Orleans, so it was a complete loss of the public health support for the Black community.

GM: What about private health care?

SR: Well, private health! Currently, Louisiana—I looked this up—has the worst health care outcomes out of all the 50 states and its three times worse [for Blacks]. Then [in 1965] Louisiana had one of the worst health care systems. In Bogalusa the private health looked pretty good to me. The private clinics and the doctors were competent, and the White community went to these various clinics and I talked to them and the buildings were clean, they looked competent, the doctors had been trained in the North. I don't remember how many; I think they had about 17 positions in Bogalusa at the time and the ones that I talked to seemed very, very competent and well-trained but that was for private health which was restricted totally to the White community.

GM: If I were a Black man in Louisiana, how would I have gotten my medical care at that time?

SR: You would have got into the clinic at Charity hospital in Bogalusa or in New Orleans, you would have gone to the big Charity hospital, which itself looked pretty good. It looked a lot like Bellevue hospital when I was an intern. But the net effect on the statistics was that Louisiana simply was at the bottom of the rank in health outcomes—as it is today—in 1965.

GM: I understand somewhere along the way you had to let them know that you were a government representative. What brought that about?

SR: In my negotiations with Dr. Eberhart [and other NIH officials], they really were aware that NIH didn't want any publicity on this and that they were doing this because of their principles. So I sort of made an agreement, which I really didn’t keep because I couldn’t, that I would not say that I was a government representative. I was a representative of the Medical Committee looking at the degree of compliance with the rules. I was arrested. And when I arrested, I really had to say that not only was I a government representative but call the FBI. I had to really use that as a cudgel to prevent myself from being injured. They really didn't know whether to believe me. And I had my NIH PHS card with me which showed that I was an officer in the Public Health Service. And they weren’t quite sure if I was telling the truth or not. So I had to do that, and I did it.

GM: Did that cause any negative consequences?

SR: NIH was very positive. I think that it protected me to a large extent. When I was interviewed by the FBI after being arrested, they asked me a lot of questions and I pointed out I'm working for the same organization as they were, so I think that stabilized things. When I came back, the NIH, including the director, was very supportive to my wife and me and they were—everybody called up and was very proud of this and they were worried about my safety. Actually it was a positive thing for me at the NIH.

The staff that I knew was very liberal and at the same time going down and trying to desegregate Bethesda (Maryland). Bethesda at that point had the restaurants and the movie theater segregated so people in our lab, including my lab chief, were going down and sitting and desegregating the city in Bethesda. So people were very involved in the movement.

GM: The NIH campus was in Bethesda at that time.

SR: Yeah.

GM: And Bethesda had grown up as a Southern community?

SR: Well, all I know is that the movie theater was segregated and several of the restaurants were segregated, and my colleagues at NIH were going down to essentially sit-in to desegregate the movie theater and restaurants.

GM: Was DC segregated as well?

SR: No, not de jure. The Eastern shore was segregated, and DC was segregated in terms of interaction between the two communities, but DC was not formally segregated; you could go to any restaurant.

GM: So would you say the Jim Crow laws extended into Bethesda?

SR: Yes and into the Eastern shore.

GM: Did it go any further North than that?

SR: At that time I don't know. I just remember that my colleagues, including the Black lab technicians, were going down together to form sit-ins.

GM: Did you have Black people hired at that time?

SR: Oh yes, we had several really outstanding lab technicians there who really knew how to handle the monkeys and the rats, and it was a very open environment. We had Black friends in the city. We interacted sort of openly and I think everybody was involved in promoting civil rights at that time.

GM: That was a very upsetting period for this country. How long were you in the South?

SR: I did my formal collection of data and interviews over a three or four day period which was sufficient for me to… and I had done the prior studies in research at the library. But on the third day I was arrested and then I had to stay there not to do the interviews but because I was told by the CORE lawyers in New Orleans, "Don't leave. You have to stay because you have to appear in court." So I stayed about five more days, essentially seeing and interacting with the community as they—with everybody around me, protected—as they were preparing for the CORE march on the weekend. James Farmer, who was the president of CORE, was coming down, students were coming down, people were cleaning their guns, and people were getting walkie-talkies from New Orleans. I just stayed there and interacted with people and that's when I got to know them very well.

After that I left and dropped by New Orleans and then wrote the report. But then two years later I was at a biophysics meeting in New Orleans and I had the free weekend, so I drove up to see how everybody was. I was acting like a journalist at that point. I just talked to them about where they were. And then about two years later two of the people in Louisiana came up to Washington. They were suing the Labor Department and Crown Zellerbach (the paper mill company), so I kept up with them then. So it was over a two-year period I kept very close to people.

GM: You told me more recently you got back in contact with some of the people from there. Tell us about that.

SR: I went on with my life. I felt a little guilty leaving everybody there in these terrible straits and did not really follow what was happening in Louisiana other than generally. About six years ago as we discussed this occasionally at home, my son pointed out that Bogalusa was in the news and that there was going be an exhibition at the African-American museum here on Bogalusa, primarily emphasizing the Deacons and the violent resistance. I contacted a journalist who had written about this because one of the sons of the Hicks family was here in Washington. I contacted him and he came over and I started writing to the daughter and asking questions about what happened 50 or so years ago, and then became very closely involved with the family. And then learned they decided to make the house a museum. First it was put on the National Register [of Historic Places] and then they were applying for money from the Interior Department. I sent some of my pictures as well as I wrote letters, official letters, helping to establish the house as a museum and now it's in the process of being renovated as a museum. I got very involved in that.

And then these memories came back, and I and my wife were invited for a commemoration of people who fought for civil rights in Bogalusa about five years ago and we stayed with the same Hicks family. The

mother is still alive; she's 92. Then I went down with my children, also, to have them see this and so I've become sort of very personally involved with the family and they with me. It's very moving to participate with this unique family that has gone on and done a lot. The children have done a lot, too.

GM: Can you identify a major change in the medical care system since you were there?

SR: Well, that's the sad part. So I thought, well, there's no segregation, clearly, and people get medical care, but I gave a talk about this to the Academy of Medicine of Washington a year and a half ago and I looked at the health statistics again. Even though the average health data are better, Louisiana is the worst, as I pointed out, the worst of all states. It ranks close to Mississippi. Mississippi and West Virginia are not far behind, and yet there's still two to three-fold discrepancy in maternal and child mortality and shorter life expectancy [for Blacks].. It's a more profound aspect that we're now addressing, that's occurring there.

GM: Has the anti-Black sense that you picked up there subsided a good deal?

SR: I was impressed. With the Hicks family we went to dinner together at a restaurant. We were treated fairly well. I asked Charles Hicks about that. He said, “Well, now when I go on the street, they call me mister. And how are you.” The Blacks are quite active; the city has recognized their responsibility. I don't know what's in their hearts, but on the surface, things are worked out. But one of the sad consequences of this is Barbara Hicks, the daughter, had a heart attack and she called me up and said, “Doctor, I've got a heart attack” and I said, “Okay, you really have to go and get care at the Charity or somewhere in Bogalusa.” She will not go to the local hospital in Bogalusa; she goes to Covington, which is 19 miles away, because, she says, “You know how they treated us.” So you're having people who are still very suspicious due to the history of Bogalusa. It's this sort of lack of trust that still exists and really interfered with her care as far as I'm concerned.

GM: They’ve taken you into their heart, so they trust you. You don’t represent anything.

SR: Well, yes. And they’re very happy—they found out that Tony [Anthony] Fauci came from NIH, I talked to them, and gee, I come from NIH, they were very impressed that NIH was interested in them. Yes, I think it’s a remarkable interaction that I didn’t anticipate. So this idea of trust and being in the same area is really very interesting to me and very, very meaningful.

GM: Do you think the report that you submitted at the time to the Medical Committee made any difference in the follow-up actions?

SR: I do. The Medical Committee wrote to me that the report was the basis for setting up that program in 1965 where they set up an office in Baton Rouge and they had about 30 volunteers come for one to two weeks to deal with sanitation, to take care of the CORE workers, to get more information, to set up health care systems. So the letter distinctly—I forgot all of this until I looked at the letter. I have a letter from the Medical Committee and the letter distinctly says that we used your report as a basis for setting up a

program in 1965, in the summer of ‘65, throughout Louisiana and with direct responsibilities for dealing with a lot of the issues and identifying them. That's one way in which the report was important.

GM: Appended to this oral history will be the oral histories of some of the men from NIH who went down the next year and served in this manner in the South so that will all be appended. People will be able to read some of the consequences that they found.

SR: The other thing that I was thinking about is that several of the people with whom I interacted went on to contribute to medical care in Louisiana. Like A.Z. Young who was the vice president [of the Voters League] who ran a taxi service, and I became a friend of his, went on to be invited to Baton Rouge and became very involved in the Department of Health where he was, by [Edwin] Edwards who was the Governor in 1972, and I'd like to think that somehow by opening his eyes to the medical discrepancies that were there, that I had pushed him to sort of followup. Then Mrs. Hicks who was there with her shotgun in 1965, applied, went to New Orleans, and became a practical nurse. The Sullivan Trade School would not accept Blacks at that time, so she went into Medicine, and then her daughter too became a nurse. So I think I may have opened the eyes of some of the people to the opportunities that they had.

GM: They must look at the very remarkable outcome from a sole person going down into a troubled area such as that. I feel pleased that you've accomplished as much as you have. I think that's a remarkable story. It really is worth recording and conserving. It's fantastic. You went back to NIH after you left there. After that you spent the rest of your professional life at NIH. Would you like to tell us what you did and what your major contributions were? There were many and they were striking and very critical.

SR: Thank you. I stayed in. I went back to NIMH and stayed in the neurophysiology lab, but I diverged to become very interested in the blood-brain barrier. My background was in physical chemistry and so at that time I sort of characterized the permeability of the blood-brain barrier, the transport properties, and developed a method to osmotically open the blood-brain barrier that over a 10-year period, first with rats and then monkeys, got converted into clinical studies with colleagues for treating brain tumors. I went from basic work and I carried it through to clinical work in the clinic and then I wrote a monograph summarizing all of this, getting this all together in 1978 for Raven Press. That essentially was the reference book for the blood-brain barrier.

In 1978 I transferred as I got appointed to head the Program on Brain Aging and Dementia at the Aging Institute [National Institute on Aging]. The Aging Institute had just opened in, I think, 1976. Dr. [Robert N.] Butler, who had worked at NIMH, became the director. And then I gave the blood-brain barrier work to the section chief and I became very involved in brain imaging techniques and describing normal aging and dementia. Over a period of time I helped to set up the 8-bed unit here at the Clinical Center and we had a very productive time teaching people and essentially characterizing aging changes and what happens in Alzheimer's disease.

That was in the clinical program, but at the same time I developed the methods for imaging fatty acid metabolism in the brain and became very involved in quantitating turnover of arachidonic acid and docosahexaenoic metabolism at rest and during activation. In 1998, the clinical program got closed down. We had a new Director, and I continued the work with the basic work, with the metabolism, and essentially identified the mood stabilizers that are used for treating bipolar disorder. You can see how I

diverged, essentially all [mood stabilizers] inhibited [brain] turnover of arachidonic acid metabolism and came to the principle that that's how they might work. I just published a paper showing that aspirin may be adjunctive to mood stabilizers because it does that. So I ran up programs in multiple directions all pretty much focused on function and structure of the brain in both the basic and clinical areas.

GM: As a physician let me ask you, the blood brain barrier, is that an actual identifiable barrier or is it a generalized chemical response?

SR: Its essentially endothelial cells stuck together by tight junctions that can be snapped open by osmotic exposure to shrink the cells and snap the tight junctions. The cells have enormous transport properties to regulate brain metabolism and enormous criteria for passive diffusion of lipid drugs. There's pumping in, there's pumping out, and then there are a lot of molecular changes. So the barrier is essentially the tight junction surrounded by glia. I just simplified it. Before when I started people didn't even believe there was a blood brain barrier. So we described it. I was lucky in having as a teacher Morris Karnovsky at Harvard who was the first one who really showed, using horseradish peroxidase with Tom Reese here, that for passive diffusion and proteins, it was those tight junctions that essentially was the passive barrier. So I interacted with that.

GM: What would happen if we didn't have the barrier?

SR: The blood-brain barrier regulates the metabolism, transports the glucose, keeps the proteins out, and when you break the blood-brain barrier down as you do in pathological cases like tumors or trauma, you lose the whole water regulation of the brain and you get swelling. The brain is a unique organ that can't sort of follow the vagaries of what's happening in the blood. You need this absolute regulation and so if you didn't have a blood-brain barrier, it loses all regulation. When you don't have it in pathological conditions, you get progressive swelling. The cranium is only so large and high pressure develops and you can die.

GM: You don't have the ability to replace an injured blood-brain barrier?

SR: The blood-brain barrier recovers after a stroke. It does recover with revascularization. You don't replace it. You need that intact vasculature. With radiation necrosis it never gets replaced and there's a continuous leakage of protein and fluid there and you have progressive damage to the brain. It requires the intact vasculature to the extent that the vasculature and endothelial layers are intact, you'll have an intact barrier.

GM: It's amazing how one can spend one's whole life on what seems to be a limited area, but such a critical area. Is there anything else you want to tell us about your experiences or maybe a little bit about NIH itself, your overall regard of that institution?

SR: I worked in two institutes. One is NIMH and I was doing something that was not really focused on psychiatry. Then the aging institute (NIA) where I sort of worked on really understanding a sensitivity to

what's happening with the brain and the crisis that we have with Alzheimer's disease and essentially, I developed methods. I've had an open mind. I only had a year of internship, but I had an open mind to really get this imaging going and to understand the progression of brain changes, related to cognitive and psychiatric changes. I started developing Down Syndrome as a model and now the methodology is just getting better and better. We understand more and more but the treatments still are evading us with Alzheimer's disease and the other diseases.

GM: I think you've lived through a period when there were a lot of technical changes like PET scans and so forth during this period of time.

SR: We know we have a lot of information. We understand the molecular biology better, but the drugs have not really come through based on molecular biology. My interest has been more, the last few years, sort of developing this method to look at the *in vivo* localized kinetics of these important fatty acids which are involved in signaling. Julius Axelrod at NIH was the first to show that in neurotransmission, phospholipase A2 is activated, and arachidonic acid is released as another important second messenger. I got to be able to do this in the intact rat and to understand it and how drugs influence it. Then I brought it into the clinic to be able to look at arachidonic acid and DHA kinetics in humans with PET scanning. I developed the tracers, the methods, and now I'm gratified to know that several other clinical programs are now applying this in Alzheimer's disease. I'm in contact with them.

GM: You're not actively doing any research now. Is that correct?

SR: I'm not physically doing it. I'm collaborating. I still have my clinical credentials at the NIH and I'm working with the group directed by [Doctor] Avindra [Nath]. I'm looking at the consequences of HIV, well-treated HIV, so I'm collaborating with them as an advisor. I'm also a special volunteer in the alcohol institute [NIAAA] which allows me to get access to the library, and I'm still advising and collaborating with people considering the brain metabolism of the long chain fatty acids.

GM: Let me ask a current issue. This COVID-19, the virus that's running around now as a pandemic, has been giving us a hard time and also affects the brain at times. Are there any thoughts through any new work just what might be happening?

SR: I just met over Zoom yesterday with the HIV group. Now they have the same group which is a neurology group setting up a program to collect data on people who have been exposed to COVID. So that's really a question that people are asking whether the virus in the brain is leading to consequences. I know people have had strokes, because of the clotting issues, but this is a big issue that they're redirecting their efforts to at the NIH, this multi-institute program.

GM: Nothing like staying right up-to-date on the issues that you worked with for so many years. That's really remarkable. It's doesn't stop, does it?

SR: Well, hopefully not.

GM: Well. You would. You're such a pioneer. You don't want to see it stop. There's too much always to be learned I would think.

SR: I thank NIH for allowing me to do this, I and my wife. My wife also has worked at the NIH for a large part of her career, she headed Child Psychiatry, and so we were both very lucky to be able to work there and, in fact, to collaborate sometimes.

GM: That's a remarkable story, too. Do you have anything else you want to talk about or not?

SR: No, that’s a lot we’ve discussed.

GM: You certainly left us with lots to think about, a lot of potential for the future. You set the stage very nicely. I will always think of you as a very special physician. You've stimulated me to think about the blood-brainbarrier. I'm very very enthused to hear about your background, your involvement, and your accomplishments. I would say your bravery and your reminiscences of Bogalusa and even the fact that you brought this to our attention so we could record for our library and keep it so other people in the future can benefit from the historical experiences in the South. I believe that is very important in our archives and collections. We thank you very much for setting all this up.

SR: Thank you very much.