Introduction

On February 5, 1962, one hundred distinguished microbiologists, virologists, and biochemists, including four Nobel laureates, met in a New York hotel to pay tribute to Dr. Thomas Rivers, a member emeritus of the Rockefeller Institute for Medical Research. A fifth Nobel laureate, Dr. John Enders, ill in Boston and unable to attend the festivities, telegraphed the following message to Dr. Rivers: "We the members of the church salute the apostolic father."

The recognition that Dr. Enders and others accorded Dr. Rivers that day was singularly appropriate. For a period of almost forty years, Dr. Rivers had been a dominant figure both as an investigator and as an administrator in virus research in the United States. Three months later, at the age of 73, he was dead. Dr. Rivers' death did not mark the end of one era in virology or the beginning of another. His career in essence spanned the development of virology from its status at the beginning of the twentieth century as an adjunct to bacteriological study to its current position as an independent discipline, as much concerned with the fundamental problems posed by molecular biology as with the diseases caused by viral agents.

This oral history memoir is an attempt to chart the evolution of Dr. Rivers' career. Oral history is a relatively new phenomenon in American historiography, and a note as to its development, purpose and procedures may serve to put Dr. Rivers' memoir in perspective. In 1938 Professor Allan Nevins, in his handbook of historiography, *The Gateway to History,* urged his fellow historians to establish an

organization which would make a systematic attempt to obtain from the lips and papers of living Americans an expansive personal record of their participation in the political, economic, and cultural life of the nation. It was his hope that in this way a unique archive of autobiographical material might be prepared for the use of future historians. There was precedence for Professor Nevins' proposal. Autobiography was an old and vital tradition in western historiography. Further, during the nineteen twenties several notable projects had been organized for the collection of autobiographies to elucidate the history of psychology and medicine. Equally important, other social scientists, in particular anthropologists and folklorists, had long demonstrated the usefulness of oral traditions for historical research.

Professor Nevins' proposals, however, elicited little enthusiasm from his contemporaries. Some voiced reservations about the wisdom of having historians gather memoirs from the living. They felt that such a procedure would of necessity compromise the historians' objectivity and in the end lead to the production of self-serving, partisan accounts of recent events. Others argued that historians had neither the skills nor funds necessary to capture autobiographical interviews verbatim. In spite of these and other objections, Professor Nevins continued to proselytize for his idea. In 1948, soon after the tape recorder was perfected for commercial use, he secured funds from several foundations and established an oral history research office at Columbia University to carry out the plans he had projected a decade before. Professor Nevins' persistence not only showed a belief in his own original vision and purpose, it also reflected the growing need of those who worked in contemporary history to find a way of coping with some of the complexities created for historical research by modern technology.

Historians are agreed that modern society rests in part on foundations created by printing and paper making. These are important not only because they rank among the oldest of modern industrial processes but because they also serve as catalysts of human thought. Newspapers, magazines, books, and a vast mechanically produced correspondence all testify to the pervasiveness of print and paper communication in all facets of our daily public and private life. Indeed the one constant result of both business and government seems to be

the production of new records. It is a condition that has provoked some archivists to make the irreverent suggestion that the best possible thing that could happen to modern historical records was a good fire.

Paradoxically, the industrial process which has created this superabundance of records has also produced a technology which threatens to deprive the historian in future of a great deal of the substance, detail, and variety usually found in the process of human events. This technology, of which the automobile, airliner, radio, television, and the telephone are but a part, has created a revolution in communication that has made the world smaller, changed the tempo of living, and transformed the nature and uses of time. Its hallmark is talk. As a result of new sound and visual communication, much of the detail of human experience, which was previously put to paper because of the exclusive nature of print and writing communication, has today been sapped from the record and become fleeting and ephemeral. Such experience, if preserved at all, is only to be found in the memory of living men. It is this paradox of simultaneous plenty and scarcity in contemporary records that in large measure defines the tasks of those who work in oral history.

In an important sense oral history is misnamed. While it is true that the oral historian helps gather an oral memoir, it is equally true that such an account is based on a written record. It is precisely this record which ultimately determines the course and substance of his work. That work may be divided into four parts. Once a subject has been chosen to be interviewed, the oral historian, like any other historian, must prepare himself in extant primary and secondary source material so as to see and define relevant historical relationships and problems. Second, armed with a tape recorder, he must so handle himself and his preparation as to spur the chosen subject's memory of past events. Third, he must gather from his subjects, and other people, supporting documents of contemporary demonstration, both as a check on the tenuousness of memory and to supplement the account gathered. Fourth, he must edit or aid the subject in editing the final preparation of the memoir so that it says what the subject wants it to say.

The memoir that emerges as a result of this process is a new kind of

historical document. Although it has been created by a participant in past events, it is also the creation of the historian-interviewer who has in fact determined the historical problems and relationships to be examined. This mutual creation contributes to both the strength and weakness inherent in oral history memoirs. And it is for this reason that the circumstances surrounding the production of any given memoir must be clearly set forth. The events leading to the creation of Dr. Rivers' memoir were these.

In the spring of 1961, soon after beginning research on a projected history of poliomyelitis and The National Foundation, I asked Dr. Rivers, then Vice President for Medical Affairs of The National Foundation, to allow me to record his memoirs. This was not the first such request I had made of Dr. Rivers. Five years before, while gathering medical and other scientific memoirs for the Oral History Research Office at Columbia University, I had presented a similar petition and was refused. This time he consented. I was helped in obtaining that decision by an untoward circumstance. A short time before I had approached Dr. Rivers, he was operated on for a malignancy in one of his lungs. It so happened that on the day I met with him he was more than usually bored by the inactivity that convalescence had forced on him, and he seized on my request as a way of escaping the confinement of recovery. Dr. Rivers' consent was not without restrictions. Although he agreed to talk with me about his career in science, he stipulated that under no circumstances would he speak to me of his family or his private life. When I remonstrated that posterity would never believe that he had appeared, fully grown and armed, from Zeus's forehead, he agreed to tell me a little about his father and mother, but nothing more. Both the circumstance of Dr. Rivers' illness and the restrictions he placed on our talks are important because they serve to explain some of the content of his memoirs.

By nature Dr. Rivers was a curmudgeon.* He had a keen critical

* Dr. Richard Shope, a long-time associate of Dr. Rivers at the Rockefeller Institute, characterized him as follows in a biographical notice he wrote soon after Dr. Rivers' death.

"Although Dr. Rivers was by nature a friendly person, he had the capacity of being irascible and pugnacious. He was a difficult and formidable person to oppose and could be stubbornly inflexible in maintaining a position. His discussion at scientific meetings of findings with which he disagreed could on occasion be so stinging that the audience,

mind, possessed a waspish tongue, and loved a good fight. His illness accented some of these characteristics. Further, from the beginning of his illness he knew he was suffering from a malignancy. While he initially hoped that the operation he had undergone might stem its development, by the end of the summer of 1961 he knew he did not have long to live. These circumstances not only contributed to his candor about himself and his work, they also encouraged him to make uninhibited comments and judgments about people he knew in science—comments that in ordinary circumstances might have been more discreet. His illness affected the conduct of the interviews as well. Although on several occasions I saw Dr. Rivers socially in his home, at no time would he permit interviews to be held there. All interviews were held in his office at The National Foundation or his offices and sickroom at the Rockefeller Hospital. I felt that he insisted on this for two reasons. First, it allowed him to keep the interviews on a formal plane, and second, by arranging interviews in his office he created an added incentive for himself to carry on his daily activities as he had before his operation. In the last seven months of his life he came into his office at The National Foundation five days a week until his illness required hospitalization two weeks before his death.

I particularly regretted Dr. Rivers' decision not to speak about his family and private life, because it meant that I was unable to examine with him his home environment and the larger social environment of the New South in which he came of age. More important, it prevented me from discussing with him his social beliefs or to examine the impact of his scientific career on those beliefs.

As a result of both Dr. Rivers' restrictions and my ultimate purpose in writing a history of poliomyelitis and The National Foundation, I concentrated my interviews on four basic subjects or problems: the development of Dr. Rivers' medical and scientific education, the evolution of his virus research, an examination of those scientific institu-

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even though realizing the correctness of Rivers' position, often had their personal sympathies entirely with Rivers' opponent. Many of those who have known Dr. Rivers best have felt the sting that he could so picturesquely deliver in an argument. Few of us have had the nerve openly to side with his opposition in one of these 'knock down' and 'drag out' discussions." R. E. Shope, "Tom Rivers." *Journal of Bacteriology*, 84:385–388, 1962.

tions and organizations in which he had played a singular or important role, and finally an examination of problems in the administration of scientific research, as exemplified by the development of polio research during the nineteen forties and fifties.

My preparation for the interviews began several months before the first interview actually took place and was continued throughout the course of the interviews, a period of approximately 15 months. Interviews were so arranged as to facilitate research and were usually held at the beginning and end of each week. In general, the interviews ran for no longer than an hour, though an occasional one ran for an hour and a half or an hour and three quarters.

At the end of each interview I would not only outline for Dr. Rivers the subject matter or problems that the next interview would cover, I would also supply him with copies of letters, documents, and scientific papers that might serve to refresh his memory. For his part, Dr. Rivers would frequently direct my attention to material that he thought might be useful to me in my preparation. In this sense the interviews were "prepared." At every interview I came armed with relevant books and documentary material so that if the need to look at or quote from such material arose it was immediately to hand. On several occasions Dr. Rivers quoted passages from such documents or books or asked that such material be inserted later in the memoir. Once an interview was completed, it was immediately transcribed.

While the end product of oral history often looks neat and logical, the process itself isn't, because man's memory and the course of conversation are frequently untidy. Although I tried to examine all subjects and problems with Dr. Rivers chronologically, so as to establish a rudimentary outline of development, I was not always successful. Often during the pursuit of a subject, both Dr. Rivers and I were led by the nature of conversation and subject matter into making digressions. At times Dr. Rivers would repeat himself. On other occasions he would forget a precise date or name of a person. At such time he would ask me to find the date or name and insert it in the memoir. Such forgetfulness is common at any age and was in no sense characteristic of Dr. Rivers' memory. His recall of substantive matters was prodigious—so much so that it was often a conversation piece among

his long-time colleagues at the Rockefeller Institute and his associates at The National Foundation.

When interviews on a given subject were completed, I edited that portion of the transcript and submitted it to Dr. Rivers for his approval. My editing chores in the main consisted in arranging the material in chronological and chapter order, eliminating repetitious material, and inserting blank dates and names. No attempt was made to alter Dr. Rivers' language, to make him grammatical, nor were the expletives and other expressions he was fond of eliminated. Errors of fact and interpretation, even when known to be errors, were kept because such mistakes were often revealing of the man and his thought. These I have footnoted passim.

In the end my method of proceeding chronologically and editing the transcript while the interviews were still in progress worked against me, because Dr. Rivers died before I could carry my investigations and interviews much beyond 1958. I was unable therefore to examine with Dr. Rivers at least two important subjects, the development of the Sabin vaccine after 1958 and the scientific background of the decision of The National Foundation to enter the field of birth defects and arthritis.

After Dr. Rivers' death, I sent portions of his memoir to several of his former colleagues and friends mentioned in the text for critical comment. Among those who commented on the manuscript were Dr. Peter Olitsky, Dr. Peyton Rous, Dr. John Enders, Dr. Joseph Stokes, Jr., Dr. Albert Sabin, Dr. David Bodian, Dr. Hilary Koprowski, Dr. Thomas Turner, Dr. Jonas Salk, Dr. Joseph Smadel, Dr. Harry Weaver, and Dr. Walter Schlesinger. They sent valuable critical material which is appended in various footnotes throughout the text.

It is an impertinence to tell a reader how to read a book. The nature of a book, however, must be understood. Dr. Rivers' oral history memoir is an account of some aspects of the recent history of American virology from a particular moment in time filtered by individual experience. In no sense is it presented as an exclusive historical source. It is rather a corroborative source and guide. As such it is a beginning of interpretation, not an end.

ACKNOWLEDGMENTS

This work could not have been completed without assistance from many quarters. My profoundest debt is to Mr. Basil O'Connor, the President of The National Foundation, for his continual support, encouragement, and cooperation with my work on a history of poliomyelitis and The National Foundation. Without the help of The National Foundation there would have been no memoir of Dr. Rivers. Mr. Joseph Nee, the Senior Vice President of The National Foundation, and Mr. George Voss, Vice President for Public Relations, facilitated my research at critical times by gaining access for me to special materials relating to Dr. Rivers' work with the Foundation. Dr. Theodore Boyd, Director of Research at The National Foundation, put at my disposal his vast store of knowledge of virus research in the United States and freely discussed with me special problems in the history of poliomyelitis. These discussions were invaluable in my preparation. Mr. Joseph Mori, a senior member of the Division of Public Information and a trained microbiologist, helped guide me through the vast polio literature of the last 25 years and rendered special assistance in the preparation of a glossary of scientific terms which is appended to the memoir. Mr. Gabriel Stickle, Executive Assistant to Mr. Basil O'Connor and Statistician to The National Foundation, instructed me on some of the finer aspects of the history of the gamma globulin and Salk vaccine field trials in which he played a significant role. It should also be recorded that Mr. Charles Bennett, Mrs. Dorothy Davis, and Mr. Josef Berger of the Division of Public Relations met with singular patience a stream of unending requests for newspaper and magazine articles, and with equally great forbearance the author's penchant for telling "stories" he believed to be funny.

I am also heavily indebted to many of Dr. Rivers' associates at the Rockefeller Institute (now the Rockefeller University) for their help and advice throughout the course of my work. Dr. Detlev Bronk, the President of the Rockefeller University, facilitated my research by generously granting me access to the reports made to the Board of

Scientific Directors of the Rockefeller Institute from 1907 to 1953. These reports constitute one of the most important primary sources of medical and biological research in the United States in the first half of the twentieth century. Dr. George Corner, Executive Officer of the American Philosophical Society and historian of the Rockefeller University, made available to me a copy of his *History of the Rockefeller Institute* before publication and guided me to collections of manuscript material he knew would be helpful to me in my own research. He also made me welcome at meetings of the History of Science Seminar at the University over which he presided, and on two occasions allowed me to present papers on my work with Dr. Rivers.

Special mention must be made of the assistance given to me by the late Dr. Peter K. Olitsky. When I began my studies in the history of poliomyelitis, Dr. Olitsky, although in retirement, undertook to tutor me in virology and spent long hours discussing with me the manifold problems involved in research on neurotropic viruses in which he was expert. He also read Dr. Rivers' memoir in its entirety and at various points added information which I have since incorporated in the memoir as footnotes. Beyond this, Dr. Olitsky extended his friendship. One of the great satisfactions of my research at the Rockefeller University was that it gave me the opportunity to meet and know this very rare human being.

Throughout the course of my research I benefited from discussions with various members of the University on problems in the history of science and medicine, among them Drs. Alexander Bearn, Merrill Chase, René Dubos, Stuart Krasner, Alfred Mirsky, Eugene Opie, Peyton Rous, Howard Schneider, Edward Tatum, and the late Drs. Ludwig Edelstein, Duncan MacInnes, Richard Shope, and Wayne Woolley. Miss Alice Lockie, the superintendent of the Rockefeller University Hospital, and Miss Georgianna Drew, the assistant superintendent, out of the goodness of their hearts, instructed me in the history of the Rockefeller University Hospital during Dr. Rivers' administration and by many personal kindnesses facilitated my research and interviews with Dr. Rivers, especially during a special ten-day hospitalization of Dr. Rivers in November of 1961. Miss Sonia Wohl, the energetic associate librarian of the University, saved me precious hours with her amazing knowledge of scientific and historical

literature and the special magic that seems to be hers alone of discovering material not listed in library catalogues. Mr. Bernard Lupinek, the superintendent of building and grounds at the University, and Mr. Kenneth Schmitt, the assistant superintendent, arranged an excellent facility for me to work in, while Mr. Waldo E. Flinn, the business manager of the University, with great kindness assumed the onerous task of providing me daily with manuscript material usually kept in the University vaults for safekeeping. In retrospect it seems that the only thing that the Rockefeller University did not do for me was to tuck me in at night.

There is no history without documents, and I would like here to thank Mr. James Thomas Flexner and Dr. William Welch Flexner for giving me permission to examine the papers of their father, Dr. Simon Flexner, the first director of the Rockefeller Institute. Without this unique collection, it would have been difficult to undertake an analysis of the first fifteen years of Dr. Rivers' tenure at the Rockefeller Institute. In my search for source material I derived great benefit from the expert knowledge of Mr. Albert Leisinger, Miss Jane Smith, and Mr. Joseph Howerton of the United States National Archives, who guided me with sure hands through the vast records collections in their care. The help which they extended was by any criterion far beyond the call of ordinary duty. I also received valuable assistance from Miss Ruth Doloboff of the Medical Division of the Metropolitan Life Insurance Company, who arranged an examination of the papers of Dr. Donald Armstrong which were in her keeping. There is no way I know of measuring the value of the help given to me by the late Miss Florence Sweeney, Mrs. Rose Feder, Mrs. Mary C. Bachmaier and Mrs. Dora deVenau of The National Foundation Records Center. I can only note that they devotedly and effectively extracted from the more than 3000 linear feet of records that comprise The National Foundation's Archives the numerous special documents and correspondence that I needed in preparation for my interviews with Dr. Rivers.

Oral history demands excellent secretarial assistance and I received just such assistance from Mrs. Elizabeth Freidel and Mrs. Lenore Hogan, who perceptively transcribed Dr. Rivers' tape recordings, and from Miss Olga Zurawel, Mrs. Josephine Calvert and Mrs. Marie Mc-

Loughlin of The National Foundation's secretarial staff, who helped me prepare the manuscript for publication. I must add that this assistance confirmed me in the belief that extraordinary benefits can be gained by living under matriarchal rule.

In the past decade I have engaged in almost continual dialogue with Dr. Louis Starr, director of the Columbia University Oral History Research Office, and Dr. Harlan Phillips about principles of oral history. Although these discussions have often led to disagreements, they have nevertheless served to clarify my own thoughts about oral history for which I can only be grateful. In recent years I have especially benefited from discussions with Dr. Richard Shryock and Dr. Whitfield Bell of the American Philosophical Society, Dr. Nathan Reingold of the Smithsonian Institution, Dr. Thomas Kuhn of Princeton University, Dr. John Blake of the National Library of Medicine, and Dr. James Cassedy of the National Institutes of Health, about the special relation of oral history to the history of contemporary science and medicine. I owe a special debt of gratitude to Mr. Melvin Glasser, former Executive Vice President of The National Foundation and currently Director of the Social Security Division of the International Union of the United Automobile Workers for originally pointing out to me the importance of studying voluntary health agencies for an understanding of contemporary social and scientific history.

In a very real sense, Dr. Rivers' oral history memoir only became a book because of the singular devotion and help of my friends, Professor George Dalton of Northwestern University, Professor Heyward Ehrlich of Michigan State University, Professor Jerome Y. Lettvin of Massachusetts Institute of Technology, Professor Charles Hoffmann of the State University of New York at Stony Brook, and Professor Leonard Levy of Brandeis University. While those who know them hardly think of them as midwives, I can testify that they have talents in this direction—they were indispensable in getting my book born.

There are some people who revel in anonymity and blanch at the thought of receiving public acknowledgment for the help that they have extended. In ordinary circumstances I would honor such wishes. Yet I believe it would be unfair if I didn't acknowledge the assistance given me by two very special people. Mrs. Mabel Bright, executive

assistant to President Detlev Bronk of the Rockefeller University, by her wise counsel and aid, gave important impetus to my work during my research at the Rockefeller University. I also owe a particular debt to Mrs. Elin Wolfe for allowing an old friend to persuade her to put important work aside and to assume the burden of preparing an index.

Robert Frost once wrote that "home is where they have to take you in." There are many homes where that ain't necessarily so. I do know that I would never have been able to complete my work were it not for the help and affection given by my family. Although natural debaters and loud talkers, they provided me with the quiet and isolation I sometimes needed and the laughter and understanding I needed at other times. They shaped the home environment to sustain me, and that is more than taking you in.

Because people have helped me it does not necessarily mean they approve of what I have done, nor should they be held responsible for the work that follows. That burden is mine.

SAUL BENISON

New York City
November 1966

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CHAPTER 1

Beginnings

CARTER: *Be both your legs bedfellows every night together?*
FAUSTUS: *Wouldst thou make a colossus of me that thou asketh me such questions?*
CARTER: *No, truly sir, I would make nothing of you, but I would fain know that.*

Christopher Marlowe, *Dr. Faustus*

Q: Dr. Rivers, I wonder if you would tell me something about your parents.

Rivers: My father was named Alonzo Burrill Rivers and was the son of Burrill Greene Rivers, who lived in Milner, Georgia. My father was born either just before or during the Civil War. My Grandfather Rivers was in the Southern Army and received a wound which did not incapacitate him.

My mother was named Mary Martha Coleman and was born in Henry County, near McDonough, Georgia. Later my mother's family moved to Jonesboro and bought a farm and a home there. In addition to running a farm, they also ran a hotel in Jonesboro, and it was very close to the railroad station where my father-to-be worked. This is the way my father met my mother.

Q: I take it the railroad was the Georgia Central.

Rivers: My father worked for the Central of Georgia Railroad as a railroad telegrapher. However, he got out of the railroad business when the Central of Georgia people insisted that he leave Jonesboro