LEWIS P. ROWLAND, M.D.

NINDS AT 50

CELEBRATING 50 YEARS OF BRAIN RESEARCH

50th

ANNIVERSARY

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An Incomplete History Celebrating the Fiftieth Anniversary of the National Institute of Neurological Disorders and Stroke

LEWIS P. ROWLAND, M.D.

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Name Changes for the Neurology Institute

1950	NINDB	National Institute of Neurological Diseases and Blindness
1968	NINDS	National Institute of Neurological Diseases and Stroke
1975	NINCDS	National Institute of Neurological and Communicative Disorders and Stroke
1988	NINDS	National Institute of Neurological Disorders and Stroke

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PREFACE

The origins of this book can be dated precisely. One fine day in April 1999, I visited the office of Gerald D. Fischbach, who was then the Director of NINDS. I was there as a representative of the Parkinson's Disease Foundation. Our goal was an action that has made some NIH institute directors uncomfortable; we were promoting "targeted research." More specifically, we were advocating increased NINDS funding for research on Parkinson disease.

This book arose from the introductory small talk that day. Dr. Fischbach asked what I had been doing in the year since the end of my term as Chair of Neurology at Columbia University. I replied that I had planned to write a history of the Neurological Institute of New York and its role in the rise of scientific neurology in the years since I started training in neurology in 1950.

His response was immediate. "Why don't you write a history of NINDS? We are about to celebrate its fiftieth anniversary."

It was as simple as that. Well, the agreement was as simple as that, but the details of an arrangement took some time to work out. I was granted permission to take sabbatical leave from Columbia and arrived to work fulltime in Bethesda on March 1, 2000. The original plan for the book was continuously modified. We had several discussions about my capacity – or that of any other single person, historian or neurological professional – to write such a book. On several occasions I suggested that a multi-authored book would better serve the record of scientific advances. Dr. Fischbach, however, wanted the perspective of a single senior person in the field.

So, what are my credentials?

In 1950, I started training at the Neurological Institute of New York with H. Houston Merritt. My professional life therefore coincides with the life of NINDS.

In 1953, I was in the first group of Clinical Associates at NINDB. We were appointed even before Milton Shy had been selected as Intramural Clinical Director. We were rushed to NIH for the scheduled opening of the Clinical Center on March 1, 1953. In fact, the hospital did not open until September 1, so I had to look around for something to do. By blind good fortune, I had the opportunity to work with Seymour Kety, Louis Sokoloff, William Landau, and Walter Freygang. That experience had a profound impact on my views about neuroscience, and it generated lasting friendships. Afterwards, I worked with Milton Shy, who allowed me to do my own patient-oriented research.

I left NIH in 1954 and then had an academic career at Columbia that brought even more gratification. In the process I spent four years in the laboratory of

David Shemin, a leading biochemist in the days when the biosynthesis of complex molecules was being worked out. Shemin was largely responsible for delineating the formation of porphyrins and heme. With that background, I was able to set up my own laboratory and work on the biochemical genetics of human neurological diseases. In 1961, I became the co-principal investigator, with Robert A. Fishman, of one of the first NINDB Clinical Center grants (now called program projects). I maintained that grant in one incarnation or another for almost 40 years, thanks to my later partner, Salvatore DiMauro. I hold no claims to major scientific contributions, but my experience kept me informed of the impending molecular changes in clinical neurology.

In 1967, I became Chair of Neurology at the University of Pennsylvania, followed by my stint at Columbia from 1973 to 1998. Those positions gave me another view of the activities of NINDS and how important the Institute is to academic departments throughout the country. My contacts with NIH were reinforced by interactions with NINDS staff when I was an officer of the Association of University Professors of Neurology (comprising the heads of neurology training programs), the American Neurological Association, and the American Academy of Neurology. I came to know personally every director of NINDS now alive except for Edward MacNichol.

I saw the world of NIH from another side, too. I served on the Training Grant Committee of NINCDS, on site visit teams, on the Board of Scientific Counselors (which provides peer review for the intramural programs), and also on the National Advisory Council – just when the Decade of the Brain was being formulated.

One more possible attribute is that I like to write. I have been on the editorial boards of several journals and was editor-in-chief of *Neurology*, the official journal of the American Academy of Neurology.

Putting that record together, it might seem that, if any single author could write the book, it would be someone like me. However, I cite my credentials less as boasting than as apology. As I started to collect information, carry out interviews, and write the book, I soon became aware that I had never done anything like this before, that the task was enormous, and that I might not be up to it. To some degree, I shifted from institutional history to personal histories and focused more on the people involved than the organizational structure. I started to write mini-biographies. In doing so, I had to learn details of basic neuroscience that had gone by me.

I became so preoccupied with the biographies that my son, Andrew, told me I should have written the entire history of modern neuroscience in the form of Paul de Kruif's *Microbe Hunters*, a book that had enthralled me in adolescence and had also affected many of the investigators described here. By that time, however, we were nearing the absolute deadline for completion of the book. A more comprehensive history-as-biography seems a good idea for neuroscience, but I leave that to another generation.

The biographies of the prizewinners need some explanation. I did not think I could cover all of the neuroscientists who had won Nobel Prizes since 1950, so I started with investigators only from the NINDS intramural program. When I wrote about Carleton Gajdusek, an intramural researcher who won the Nobel Prize in 1976, I realized I also had to write about Stanley Prusiner, an extramural grantee (who won the Lasker Award in 1994 and the Nobel in 1997), because both worked on Creutzfeldt-Jakob disease. Dr. Prusiner's chapter was the first about an extramural investigator, and it was written just as the 2000 winners were announced: Drs. Carlsson, Kandel, and Greengard – they had to be included. The resulting mix of prizewinners seems to be a somewhat inconsistent group, and I must apologize to the several extramural Nobelists who have not been included because there was insufficient time.

As for the text itself, I know that some readers will pick up errors, and I know that I have omitted mentioning many people who deserve applause, both investigators and administrators. I have become especially impressed by the Program Directors in the NINDS extramural program. My office at NINDS was close to theirs; I ate lunch with them, and went to their weekly staff meetings. Part of their job is to arrange workshops to initiate research programs throughout the country, as well as guide university investigators through the process of preparing grant applications. With involved clinical investigators and statisticians, they initiate and carry out therapeutic trials. In every way, the success of university research depends on the knowledge, skills, and devotion of these scientist-administrators.

Early in the year, a friend asked me: "Who is going to read this book?" I was haunted by that question for months, as the answers gradually emerged. First, there will be people who will immediately look in the index to find out if their names are listed.

I hope that general readers will find the biographies illuminating and informative. I hope that others will find out how NINDS works and what it has achieved. In all of this I have tried to write in a way that is comprehensible to non-scientists but not offensive to scientists.

So, here it is, a book for the record, not a novel and perhaps not even a true history.

A caveat is in order. This book is a celebration. I have deliberately omitted rumors of fights and debates between investigators. I have tread lightly on conflicts between institutional chiefs and NIH leaders or between institute leaders themselves. Celebration it is. NINDS has been one of the most powerful motors that pulled and pushed the rise of modern neuroscience. In the pages that follow I applaud the administrators and the scientists involved.

This could be called the Andy Warhol approach. In his autobiography the artist wrote: "When I did my self-portrait, I left all the pimples out because you always should. Pimples are a temporary condition and they don't have anything to do with what you really look like. Always omit the blemishes – they're not part of the picture you want."

A long list of acknowledgments appears near the end of this book, but a few people merit special recognition. The first is Gerald D. Fischbach, who started the project. Then come Audrey S. Penn, now NINDS Acting Director, and Kevin Kirby, NINDS Acting Deputy Director, who kept the project going through times of stress. My Columbia Chairman, Timothy A. Pedley, and Columbia Vice-President Morton Grusky arranged the sabbatical leave.

Four others were closely associated with the project: Robin Latham, a science writer/editor in the NINDS Office of Communications and Public Liaison, used her talents as a perceptive reader and writer to shape and focus the book, and her skills as a project manager to keep it on track. Nancy Berlage, Ph.D., an historian with History Associates, Incorporated, acted as a fact-detective and constructive reader. Among other contributions, she compiled the information to track NINDS officials through the years, which proved to be a formidable task. Brenda Van Hook, remarkable secretary and Internet whiz, served for a year from the start of the project in March 2000; she transcribed most of the interviews and came up with numerous valuable documents, including one that led to the oral histories of Mary Lasker. Larissa Markarian picked up when Ms. Van Hook left and completed more work in a few weeks than most could do in months. Pamela Jones, chief of publications in the NINDS Office of Communications and Public Liaison, took on the responsibility of deftly moving the book through the publication process, coping with missed deadlines and last-minute additions with grace and good cheer. Marian Emr, director of the NINDS Office of Communications and Public Liaison, ably guided and supported the entire effort.

To all of these NIH workers, I owe not only thanks but also apologies for my inability to finish the text until the very last moment. I surely did not make it easy for them.

Victoria Harden, Historian of the National Institutes of Health, gave encouragement, counsel, support, and pertinent documents; her own writing on the history of NIH served as a model. The staff of the NIH history office provided assistance in locating background information. Mary Marshall Clark is Director of the Oral History Project of Columbia University, where we found the transcripts of recorded interviews with several of the people who profoundly affected the history of NINDS. She was also a most helpful advisor.

I thank all 49 people[1] who consented to be interviewed. Several of them became involved again by reading and editing the sections in which they were mentioned. All of them should have had that opportunity, but the deadline precluded completion of the total task.

Guy M. McKhann came from Johns Hopkins University on a special assignment from the Director; our earlier friendship became stronger and I was grateful for his advice on important matters.

Many staff members at NINDS, and indeed many of the other institutes, served as sources of information. In particular, Andy Baldus, chief of the NINDS Financial Management Branch, provided historical information about the NINDS budget. Constance Atwell, director of the Division of Extramural Research, patiently made sure the details of the extramural program were accurate.

The list of acknowledgements serves to recognize the many who helped in multiple ways: librarians and archivists at remote university and presidential libraries, staff members of foundations and voluntary health agencies, and professional friends. Although we cannot list everyone, others, too, surely deserve appreciation for their contributions.

With special pleasure, I thank members of my family, starting with my partner of 49 years, Esther E. Rowland. She served as psychotherapist and – as an expert professional proofreader – she was the first serious reader and critic of the emerging manuscript. My son, Steven S. Rowland, is a producer of public radio programs; he provided recording equipment and instructed me in the art of the interview. Others in the family were dragooned, including Amy Edelman, a senior editor at Random House; Eileen Rowland, former Chief Librarian at the John Jay College of the City University of New York; my brother Ted, also a writer and critic; my son, Andrew S. Rowland, Ph.D., an epidemiologist at the University of New Mexico; and my daughter, Joy Rosenthal McIntyre, who is a talented writer and clear-eyed reader as well as a public interest lawyer.

A final comment. This preface has been egotistically sprinkled with the word "I." That single-letter word should not appear anywhere in the text from now on.

Lewis P. Rowland, M.D.
New York, New York
August 2002

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[1] Constance W. Atwell, Julius Axelrod, Katherine L. Bick, Roscoe O. Brady, Thomas N. Chase, Maynard M. Cohen, Francis S. Collins, "Sam" Drage, Marian A. Emr, Stanley Fahn, Gerald D. Fischbach, Kenneth H. Fischbeck, Clarence Joseph Gibbs, Murray Goldstein, Paul Greengard, Zach W. Hall, Mark Hallett, Victoria A. Harden, Richard J. Hodes, Steven E. Hyman, Eric R. Kandel, Seymour S. Kety, Ruth L. Kirschstein, Irwin J. Kopin, Leonard T. Kurland, William M. Landau, Story C. Landis, Carl M. Leventhal, John R. Marler, Joseph B. Martin, Richard L. Masland, Henry F. McFarland, Ronald D.G. McKay, Mary L. Miers, Karin B. Nelson, Paul L. Nichols, Edward H. Oldfield, Eugene J. Oliver, Audrey S. Penn, Roger J. Porter, Stanley B. Prusiner, Thomas S. Reese, Louis Sokoloff, Mathilde Solowey, Eugene Streicher, Donald B. Tower, J. Craig Venter, Michael D. Walker, and Nancy S. Wexler.

FOREWORD

Writing the history of an institution whose influence has been as deep and wide as the NINDS was not an easy assignment. The author of this history of the NINDS not only had to research and write about five decades of institutional change and progress, but also had to encompass within that story the incredible advances that have occurred in neuroscience and neurology over the past 50 years.

Lewis P. "Bud" Rowland, M.D., was willing to tackle the task and his worthy accomplishment follows in the pages of this text. As an esteemed neurologist and teacher whose specialty is neuromuscular diseases, Dr. Rowland's career has spanned both clinical and academic neurology. It has given him an advantageous place from which to view the course of neuroscience over a lifetime devoted to unraveling the mysteries and mechanisms of neurological disorders.

When Dr. Rowland came to the institute as a clinical associate in the early 1950s, he was one of the first in a distinguished group of post-war M.D.-investigators to find their passion and direction in the freewheeling atmosphere of Seymour Kety's intramural laboratory – a place that accommodated researchers from both the NINDS and the NIMH. This is how neuroscience began at NIH, in tandem with the behavioral sciences, as a fluid exchange between the physiological and psychological study of the brain. When the laboratory split in 1960, the two Institutes diverged and established their own interests and "turf." Over time, the National Eye Institute and the National Institute on Deafness and Other Communication Disorders also split off from the NINDS. Now, as the new National Neuroscience Research Center goes from dream to reality on the NIH campus, all of the neurosciences will once again be united in the same building.

The story of the NINDS is also the tale of how post-war political forces were employed and directed by charismatic individuals such as Mary Lasker, Florence Mahoney, and Senator Claude Pepper, who believed not just in the advancement of neuroscience, but in the ways in which these advances could be used to improve public health. During the time they worked together with politicians and policy-makers to create the NINDS, little was known about neurodegenerative diseases and there was little, if any, productive research on Parkinson disease, Huntington disease, stroke, spinal cord injury, or traumatic brain injury – just to name a few areas in which the Institute has spurred research during the past five decades.

Even more telling, at the time of NINDS's first steps, the locus of neurological research was in Cambridge, England, in the labs of Hodgkin and Huxley. Only a decade or so later, due to the steady, thoughtful stimulation of the science by NINDS both on and off the campus, the locus had changed. The most interesting and advanced work was now being done in the United States. Future Nobel and Lasker award-winners bore witness to the ascendancy of American and American-trained neuroscientists.

Within this book you will find the stories of some of the extraordinary individuals, who – either as intramural researchers, administrative directors, or extramural grantees – encouraged exploration or made discoveries themselves that permanently changed how we understand the workings of the brain. You will also find evidence for the continuous emphasis of moving basic science to clinical application – from "bench to bedside."

No single history could possibly include the totality of the influence the NINDS has had on neuroscience and neurology in the past five decades. This book is one person's view of the central role the Institute has played in the lives of particular neuroscientists whose discoveries have been shaped in important ways by their relationship to NINDS. The author of the book calls it an "incomplete history," partly because of its use of individuals to illuminate broader concepts and trends in neuroscience, but also because the history of neuroscience is still far from complete.

Clinical and basic neuroscience is evolving in new and exciting ways. The NINDS will continue to nourish and skillfully direct the growth of the field in the coming decades. This volume celebrates 50 years of advances. There are many more years – and countless new discoveries – yet to come.

Audrey S. Penn, M.D.
Acting Director
National Institute of Neurological Disorders and Stroke
Bethesda, Maryland
August 2001

CELEBRATING 50 YEARS OF BRAIN RESEARCH

50th

ANNIVERSARY

SECTION 1

Birth and Development

1

BIRTH OF AN INSTITUTE

The National Institute of Neurological Diseases and Blindness (NINDB) and the National Institute of Mental Health (NIMH) were not quite twins, but they were born only a year apart and they were tethered by a conjoint intramural research program. How and why they were created is a story that involves several different plot lines – all of them coming together at the right time. The time was just after World War II, in the five years between 1945 and 1950.

The story revolves around several trends that drove the need for biomedical research just after the war: a new recognition of the burden of illness; an increasingly favorable national opinion about the role of the federal government in scientific research and everything else that governments do (as opposed to private industry or philanthropy); competition between federal agencies for control of biomedical research; and, not least, the impact of remarkable individuals, both within and outside the federal government, who pushed for a federal agenda.

But even after the National Institutes of Health had been established, the outcome of proposals to establish a neurological institute within the NIH was uncertain until the last moment because it could not be taken for granted that the President would sign the final bill and make it a law.

U.S. Hygienic Laboratory, U.S. Public Health Service

THE GROWTH OF NIH AFTER WORLD WAR II

The modern National Institutes of Health arose from inauspicious beginnings soon after the American Revolution. In 1798, the fledgling government created a Marine Hospital Service (MHS) to provide medical care for merchant seamen.[1] By the 1880s, the MHS was charged by Congress to examine immigrants on arriving ships for signs of infectious diseases. This was the time when Robert Koch in Germany and Louis Pasteur in France became famous for proving that infectious diseases could be caused by bacteria. In 1887, MHS officials authorized Joseph J. Kinyoun, a physician and bacteriologist, to set up a laboratory in the Marine Hospital on Staten Island in New York City. Within a few months he had identified the organism that causes cholera, one of the most deadly and feared diseases of the late nineteenth century. That was medical research of the day – bacteriology and preventive medicine.

In 1891, the laboratory was moved to Washington, D.C., and, for a decade, Kinyoun was the sole fulltime staff member. Rather than research, Kinyoun focused primarily on teaching and applying health science to practical purposes; for example, he taught bacteriology to MHS officers and tested water purity. That changed, however, when the laboratory became the Hygienic Laboratory and acquired research functions.

Two acts, both passed in 1902, set the stage. First, the MHS was reorganized as the Public Health and Marine Hospital Service (PH-MHS), a step toward the modern Public Health Service. The same act launched a formal research program for the Hygienic Laboratory, setting up one division for pathology and bacteriology, one for chemistry, another for pharmacology, and one for zoology.

The second influential act in 1902 charged the Hygienic Laboratory with regulating the production of vaccines and antitoxins, tasks that, according to NIH historian Victoria Harden, "protected the Hygienic Laboratory from political assault because of its value for the U.S. citizenry." In 1912 another reorganization changed the name of the PH-MHS to the Public Health Service and formalized research functions pertaining to noncontagious diseases and water pollution. These changes paid off: during World War I, the PHS traced the origin of an outbreak of anthrax to contaminated shaving brushes, another research achievement of bacteriology and epidemiologic detective work.

After the war, chemists hoped that a philanthropic patron would support their basic research, but none materialized. Proponents within the scientific community turned, for the first time, to the federal government for research support. One chemist thought that research in chemistry would benefit medicine and he persuaded Senator Joseph E. Ransdell of Louisiana to take up the issue. Ransdell worked with officials of the PHS and, with an eye to research, prepared a bill that would change the name of the Laboratory to the National Institute of Health (singular).

At the time, officials of the PHS were of two minds about the proposed name change. They were reluctant to change anything and they also thought the Hygienic Laboratory already had a legislative mandate to carry out research. However, if there was to be a new agency, they wanted it to be located within the PHS where they could retain control over research agendas.

Ransdell collaborated with PHS officials to make the proposals a reality. In 1930, after four years of Congressional hearings and lobbying, the Ransdell bill became law; it extended the scope of research by the Hygienic Laboratory of the PHS from infectious disease to include chronic diseases as well.[2-4] This achievement led Harden to consider Ransdell "the unsung but true father of the modern NIH."[1]

The Great Depression of the 1930s blocked any expansion of medical research, but a new medical institute was nevertheless in the offing. In 1937, the National Cancer Institute (NCI) was created as the first of the individual institutes that make up the modern National Institutes (plural) of Health. Every member of the Senate sponsored the legislation, a show of almost unbelievable unanimity.

NCI became the model for all the other categorical institutes that would be created in subsequent years. There was ample room for expansion because the Luke I. Wilson family (of the local Woodward & Lothrop department stores) had donated – as a gift to the federal government – the land that became the Bethesda campus. President Franklin D. Roosevelt formally dedicated the new campus in 1940.[5]

President Franklin D. Roosevelt formally dedicates the NIH campus, October 31, 1940

World War II, however, put further development on hold. The exigencies of the war diverted to other needs money that might have supported biomedical research. Congressional appropriations for the NIH were paltry – just enough to maintain an administration and a smattering of wartime research.

When victory and peace seemed to be in the offing in 1944, the NIH Director, Rolla E. Dyer, and Surgeon General Thomas Parran guided legislation through Congress so that NIH was permitted to award grants and conduct clinical research, the two powers that have been the basis for the continuing expansion of NIH ever since. The stage was set for a new era of biomedical research.

THE BURDEN OF NEUROLOGIC ILLNESS

The American people had been surprised by the high proportion of young men rejected by the World War II military draft for medical or educational reasons. Fifteen million men had been examined by December 1944. A third of them had been rejected – 4.8 million – including 1.7 million who had neuropsychiatric or learning disorders. Almost one in nine of all American men had a neuropsychiatric disability.[6,7]

Then, during the war, military personnel incurred numerous traumatic injuries to the brain and nerves. Infections of the nervous system followed the injuries, as did epileptic seizures. Psychiatric casualties were widespread. These neurological and psychiatric conditions persisted when the veterans returned to civilian life, and the Veterans Administration had to increase neurologic services to care for them. The new medical specialty of rehabilitation medicine developed to deal with the disabling war injuries.

According to one estimate,[8] neurologically disabled veterans in the postwar years accounted for about 25 percent of the patients in general hospitals and 10 percent of those in psychiatric hospitals. Wartime experiences also affected ideas about patient care: during the war, American soldiers had come to appreciate good medical care, and postwar expectations were high that it would continue.

Later calculations set the need for neurologists in peacetime, estimating that one percent of the population would have a disorder appropriate for a physician with training in neurology.[9,10] Yet there were almost no neurologists in the United States. In 1950, only 250 physicians claimed to be neurologists,[11] and only 30 three-year neurology training programs were available; seven were in federal institutions. Combined, these programs provided training for only 139 neurologists annually.[4] Without an adequate number of training programs, neurologists had good reason to fear for the future of their specialty.

In 1950, there was a serious mismatch between the number of patients with neurological disorders (estimated to be 15-25 percent of all hospital admissions) and the number of neurologists. Several states, including Connecticut, as well as such cities as Detroit, had no neurologists at all. James Shannon[13] later acknowledged the shortage when he became Director of NIH.

In striking contrast to the paucity of clinical activity in neurology, there had been a rich tradition of Nobel Prizes for basic research on the biology of the nervous system in the first 50 years of the twentieth century. Among the luminaries were Camillo Golgi and Santiago Ramón y Cajal (1906), E. D. Adrian and Sir Charles S. Sherrington (1932), Sir Henry Dale and Otto Loewi (1936), Joseph Erlanger and Herbert S. Gasser (1944), and Walter R. Hess and Egas Moniz (1949).

Nevertheless, in 1950, the word "neuroscience" was not used. In medical schools, neurophysiologists, neuroanatomists, and neuropathologists were scattered within different departments. Financial support was limited to that provided by universities and foundations. Neuroradiology had barely emerged. Clinical research was mostly restricted to description, electroencephalography, and neuropathology.

TOWARD LEGISLATION: A NATIONAL MOOD

In the decades between 1925 and 1945, there was a profound shift in the American ethos – from a belief that government should be as small as possible to the view that government should be the agent for improving the lives of all citizens. That belief was embodied in the New Deal policies that Roosevelt implemented during the 1930s.

However, it took the legacies of World War II for political leaders to conceive a new role for the federal government in medical research. During the war, centralized research had been successful in developing the atom bomb, antibiotics, and drugs for malaria. During World War II, the Medical Research Committee of the Office of Scientific Research and Development (OSRD), set up in 1941, directed these efforts.[14,15]

After the war, OSRD was shut down, and the new National Science Foundation was intended by scientific leaders to encompass all scientific research. However, officials of the PHS pressed to keep any new medical research programs within their purview. Although there had been a Division of Mental Hygiene in the PHS since 1930, it had been devoted to psychiatric service, not research.

Thoughtful scientists who had different answers to the central question led the contending factions. Should biomedical research be assigned, with all other scientific research, to the NSF? Or should there be a new biomedical research agency within the PHS? President Truman wanted medical research to be not only part of a unified scientific research program but also part of a national health program. The two needed coordination.

In any case, the national state of mind in 1945 was far different from the current wariness about the role of Washington in the administration of large public programs. Confidence in federal action and involvement was bolstered by a concurrent belief in the power of science and the promise of new drugs – a belief that arose with the wartime discovery and development of antibiotics.

SETTING A LEGISLATIVE PATTERN: MARY LASKER, CLAUDE PEPPER, AND THE HEART INSTITUTE

On the NIH campus, Building 31 now houses the Directors' offices for NCI, NIMH, NINDS, NEI, and other institutes (*see* Appendix A, page 295, for guide to abbreviations). In 1988, it was designated the "Claude Denson Pepper Building." A plaque at the entrance notes that he had served in Congress for 41 years and had "sponsored the legislation that established the majority of the NIH Institutes."

Pepper was born in 1900 and grew up on a farm in rural Alabama. He graduated from the University of Alabama and then from Harvard Law School. Elected to the U.S. Senate from Florida in 1936, he was a staunch supporter of President Franklin D. Roosevelt and the New Deal. Pepper had the typical New Dealer's ethos – using federal agencies to improve social conditions. He was especially dedicated to health issues. Among Pepper's first legislative forays was a bill to establish the NCI in 1937. As he gained influence in Washington, he assumed positions in which he could affect federal health policy. During World War II, for example, he chaired the Senate Select Subcommittee on Wartime Health and Education and vigorously endorsed the view that medical research could improve the health of the nation's citizens. By the time NINDB was established in 1950, Pepper had sponsored bills that created five of the first six disease-oriented institutes.

In 1950, Pepper lost his Senate seat in a bitter campaign. Pepper's national legislative career, however, was far from over. In 1962, Florida voters elected him to the House where he would remain in office until he died in 1989. As a Representative, Pepper continued his efforts to improve health care, and he championed causes of the elderly. As Chairman of the House Select Committee on Aging, he was responsible for the law that abolished mandatory retirement. In addition, he sponsored innovative legislation to establish research centers for Alzheimer disease. For his achievements, Pepper gained an Albert and Mary Lasker Foundation award in 1967.


Mary Lasker and Senator Claude Pepper, 1980

Pepper's partner in pushing for NIH legislation was Mary W. Lasker, a wealthy New Yorker who had been an entrepreneur before she became the wife of millionaire Albert Lasker, her second husband. Albert had made his fortune as an advertising executive and encouraged his wife's efforts in public affairs. Together, the couple established The Albert and Mary Lasker Foundation, which has given influential awards for contributions to medical research.

The daughter of a banker, Mary grew up in Wisconsin, graduated from Radcliffe, and studied at Oxford. Besides her intellectual pursuits, Mary had diverse interests, such as collecting art. She was active in the Democratic Party and ardently supported urban beautification. City planner Robert Moses[16] described her personal qualities: "Intelligence, vision, generosity, charm, kindness – Mary has them all." He could have added initiative, perseverance, doggedness, gregariousness, leadership, and more.

The papers of Mary Lasker at Columbia University document her unusual ability to influence major figures in Washington. She had direct access to Presidents, congressional leaders, and NIH officials. If she wrote a note to one, there was a prompt response. Moreover, she was not shy about stating her concerns or about claiming credit for the beneficial results of her efforts. During an oral history interview in 1966,[17] she asserted:

> I had been the first one to urge the establishment of the National Heart Institute and to urge the establishment of the Neurology and Blindness Institute.

Mrs. Lasker had a strong ally in Florence Mahoney, another remarkable woman of wealth and personal influence. Mahoney's husband's father-in-law by a previous marriage was James Cox, a newspaper publisher who had been the Democratic candidate for President in 1920; his Vice-Presidential candidate in that unsuccessful campaign had been Franklin D. Roosevelt. Mrs. Mahoney lived in Florida, where her husband Daniel Mahoney was the publisher of the *Miami Daily News* and had an interest in the Cox chain of papers. Like Mary, Florence was active in politics. They backed Pepper's campaign for re-election to the Senate in 1944, and they supported his failed attempt to have Congress pass legislation for national health insurance.

How effectively Mrs. Lasker and Senator Pepper worked together was illustrated by their successful postwar campaign to increase funding for the Cancer Institute. In his memoirs, Pepper described how their collaboration ensured adequate funding for the NCI:

> For many years, only the $500,000 appropriation was available for cancer research. It was totally inadequate. One of the first to sense this was Mary Lasker, a genuine "angel" who has done so much to obtain federal aid for disease research. She urged me to seek $100 million for cancer research, to

Florence Mahoney

> remain available until it was spent. She asked Representative Matthew Neeley of West Virginia to lead the fight in the House. For months, I held hearings, with Mrs. Lasker producing the nation's leading cancer authorities to serve as witnesses. Finally, Senator Robert A. Taft . . . introduced a bill calling for a $75 million cancer research fund . . . . We joined forces and boosted the annual appropriation for the National Cancer Institute from $500,000 to more than $8 million.[18]

They repeated that pattern with legislation for the Heart Institute; the 1948 law included wording that made plural the National Institutes of Health. In that effort, they went two steps further, not merely holding hearings.

First, they obtained the wording of the 1937 NCI law and changed it; wherever "cancer" appeared, they changed it to "heart." The bill contained the same elements as the original law for the Cancer Institute: research, training, construction of research facilities, and efforts for disease control.

Second, Mrs. Lasker collected data to provide a factual background of the need for more research. Then Pepper introduced the legislation and worked with a parallel committee in the House to hold hearings. Once again, Mrs. Lasker selected the research experts who were eloquent and effective witnesses, armed with the facts.

Mary Lasker explained how they devised a bill to establish the Heart Institute:[19]

> In the fall of 1946 I was very much concerned about the fact that there were no funds whatever earmarked in the NIH of the USPHS for diseases of the heart and circulation, the number-one cause of death of people in the United States.
>
> I was tremendously influenced by the illness and death of my father due to a stroke and the illness and death of my mother due to a stroke, which was due to arteriosclerosis, and this certainly influenced me. And when I found that there was no effort whatsoever being made by the federal government in this major cause of death – almost 50 percent of the people were dying of this, and it was just considered the will of God, which God knows it was not and is not – I was furious, as usual.
>
> I considered various means of how to attract attention to this deficit. . . . Between '46 and '47, I spent some time with my husband in Florida and then I went to Washington and spoke to Senator Pepper about the need for a heart research bill similar to the cancer research bill which had been passed in 1936 but which, as I explained, didn't have any money at all, not more than 500,000 dollars until fiscal '46.
>
> Pepper said he would be glad to introduce a bill for heart research and asked me what I had in mind . . . . I stopped in Cincinnati on the way to California . . . . I remember it was the 8th of February 1947. I mailed a draft of the bill very similar to the cancer research bill, providing for a hundred million dollars to be set aside in a fund, to be available until spent; for a group of experts drawn from all over the world to be brought together in one place or a num-

> ber of places; and provided with funds to make extensive research in the field of heart disease and circulation.

Mrs. Lasker was not daunted by requests for what seemed to be large sums. She explained:

> I was encouraged to think in large sums because of my husband, because of his experience in government, since he was the head of the Shipping Board in the early '20s, which was then the agency that had the largest amount of assets . . . . Also, in his business, he wouldn't speak to anyone who wanted to spend less than a million dollars to advertise his product and he felt 15 million dollars to advertise tobacco in a year wasn't too much at that time. He would be horrified if he knew that smoking had something to do with lung cancer or any other kind of cancer, which was really only made certain only since his death. It was really his scale on which he thought and operated that influenced me. I thought that if a toothpaste, which he owned or had an interest in, deserved advertising at the rate of two or three or four million dollars a year then research against disease maiming and crippling people in the United States and in the rest of the world deserved hundreds of millions of dollars. It seemed perfectly simple and natural to me.[20]

Once the Heart Institute was achieved in 1948, the pattern was set; it worked for the National Institute of Mental Health (NIMH) in 1949 and for the National Institute of Neurological Diseases and Blindness (NINDB) in 1950. Mrs. Lasker also lobbied on behalf of the Arthritis Institute in 1950. Her diverse research interests arose from her personal experiences – one of her house workers had had cancer and, later, Albert Lasker would die of prostate cancer; both her parents had strokes, leading to her interest in diseases of the heart, circulation, and brain; and an acquaintance with a blind relative described the effects of blindness to Mrs. Lasker during the NINDB hearings, leading to her concern with vision – and the "B" in NINDB.

PRELUDE TO NINDB: A NATIONAL INSTITUTE OF MENTAL HEALTH

The Division of Mental Hygiene of the PHS, established in 1930, was largely concerned with drug addiction.[21,22] After the creation of NCI in 1937, Lawrence Kolb headed the division and formulated legislation to create a national mental health institute but World War II intervened. (Kolb's son, Lawrence J. Kolb was Chair of Psychiatry at Columbia University and, like his father, was a national leader in that field. Kolb, the younger, also played a role in the creation of NINDB.)

Robert H. Felix succeeded Kolb as Director of the Division of Mental Hygiene and drafted legislation for a National Neuropsychiatric Institute. He enlisted the aid of Mrs. Lasker, Congressman J. Percy Priest, and Senator

Robert H. Felix, M.D., was named director of NIMH in 1949

Pepper. Felix was credited with remarkable political skills and developed close Congressional ties. He also encouraged a citizens' lobby and facilitated a new federal role – as opposed to the previous monopoly of the states – in psychiatric patient care and research.

The hearings included testimony by General Lewis Hershey, who described the high rate of draft rejections. Surgeon General Parran documented the high prevalence of psychiatric disorders, and was supported by the heads of neuropsychiatry in both the army and navy.

Mrs. Lasker's personal experience with mental disorders led to her interest in mental health. Her first husband had had an alcohol problem. Trying to help him, she became interested in psychoanalysis and served on the Board of Franz Alexander's Institute for Psychoanalysis in Chicago before 1940. She later commented on the establishment of the National Institute of Mental Health, the direct predecessor of the one for Neurology and Blindness.[23]

> In connection with the beginning of our efforts to establish the Mental Health Institute, around 1942 or '43, Blanche Ittleson asked me to be a member of the National Committee for Mental Hygiene, which was then the only so-called voluntary agency in the mental illness field. There was a group of psychiatrists and laymen who were very decent and well intentioned but did not have the knowledge or skill for fund raising or propaganda that was needed to make an important voluntary agency out of it. I tried in various ways to improve its situation but was unsuccessful. The only important thing that got accomplished was the National Mental Health Institute Bill and that finally went through the Senate because Florence [Mahoney] and I had influence with Senator Pepper and I had paid for a lobbyist to watch the status of the bill and keep in touch with Dr. [Lewis] Stevenson and me about it. Dr. Stevenson was then the Executive Director of the National Committee for Mental Hygiene.
>
> I had asked Dr. Stevenson to suggest to the PHS in early '45 that a National Mental Health Institute similar to the National Cancer Institute would be a very good idea. The Public Health Service had started to work on such a bill as a result of Stevenson's suggestion.
>
> I then got some figures together showing the small number of psychiatrists trained to take care of the mentally ill and gave them to Dr. [Lawrence] Kubie, who gave them to Tom Stokes for his column in a newspaper, I think the *Post* or the *World-Telegram*. Representative Percy Priest read the Stokes column,

> which was syndicated, and had been interested in the sad situation in the mental health hospitals he had seen. He, in turn, asked the PHS to give him a bill to introduce. They gave him the Mental Health Institute bill, which was similar to the National Cancer Institute bill, which Dr. Stevenson had suggested they prepare as a result of my suggestion to him. Percy Priest got the bill through the House, but it probably would have died in the Senate without our help.
>
> We urged Pepper on, who got it though the Senate in June 1946.
>
> Q. You say through "our help" it got through the Senate. Is that you and Mrs. Mahoney?
>
> A. Yes, Florence and I. We were friends with Pepper, who was chairman of the subcommittee that reported on the bill and who was on the full committee and urged the full committee to report the bill, and then the bill got on the consent calendar of the Senate.
>
> Well, the bill contained an appropriation of 17 million dollars for training and research and we thought – Florence and I were so naïve at the time – that if the bill contained a specific amount of money that was tantamount to getting the money. We didn't realize that you had to start . . . entirely with new subcommittees on appropriations . . . and then get it through on the appropriations bills that were going through or get it into a supplemental bill.
>
> So, in this year, in '46, we didn't even know enough to ask for the money, and Pepper was busy with a lot of other things and he didn't, so there was no money for one year. I finally hired a lobbyist to try to work on this, but we finally had to do the bulk of the work ourselves as usual.

As a result, a bill establishing NIMH was passed in 1946 but there was no appropriation for funds. Felix had to apply to a private foundation for the $15,000 needed to support the first meeting of the National Advisory Council.[24] The institute formally opened in 1949, coincident with termination of the Division of Mental Hygiene in the PHS. Its tripartite mission included research, training, and service.

With the establishment of NIMH, the stage was set for the creation of a national neurological institute.

TOWARD NEUROLOGY LEGISLATION: NEUROLOGISTS AND PSYCHIATRISTS

In 1948, the American Academy of Neurology was founded and led by the dynamic Abe Baker, Chair of Neurology and Psychiatry at the University of Minnesota. He was a staunch and early advocate of a neurological institute at

A.B. Baker, M.D., American Academy of Neurology

NIH. So was H. Houston Merritt, Chair of Neurology at the Columbia-Presbyterian Medical Center then. In looking back on those early years, Francis Forster, one of the four founding fathers of the American Academy of Neurology, said that support for NINDB was the only thing Baker and Merritt ever agreed upon.[25]

Their goals differed. Baker wanted to train neurologists and Merritt thought research was the answer to the poverty of neurological therapy. But both addressed unmet needs, and both were driven by the precarious state of clinical neurology. Merritt[26] wrote:

> Even as late as 1936, there were only 16 hospitals listed in the United States as having approved training for residency in neurology. In addition, most of the physicians who took a residency in neurology went on to practice neuropsychiatry. A few turned to internal medicine or neurosurgery. This was perhaps due to two factors: first, the training they received in neurology was very scant, usually only a year, and as a result they did not know much more about diseases of the nervous system than did the internists who received several years of training in internal medicine. In addition there was great pressure for the care of patients with mental illnesses and most of those who had any training in psychiatry gradually became almost totally concerned with the treatment of psychoneurotic and psychotic patients.

Comments by contemporaries such as Lawrence Kolb, the younger, and Francis Forster, suggest that an early NIMH research grants committee was also influential in establishing NINDB. Interviewed in 2000,[27] he recalled that 52 years earlier he had served on an NIMH grants committee with Houston Merritt (then still at Harvard) and Samuel Wortis of New York University. According to the custom of the time, all three had been trained in both psychiatry and neurology. They were impressed with the number of research grant applications that could have been considered neurological rather than psychiatric, and they conceived a neurological institute by itself. Francis Forster confirmed the story.[6]

H. Houston Merritt, M.D., Chair of Neurology, Columbia-Presbyterian Medical Center

Pearce Bailey was a key player, another son of a well-known neurologist with the same name. Pearce Bailey, Senior, was one of the founders of the

Pearce Bailey, Jr., M.D.

New York Neurological Institute and, in 1913, had been elected President of the elite senior organization, the American Neurological Association. Bailey, Junior, had served in the U.S. Navy and, on his discharge in 1946, became Chief of Neurology for the Veterans Administration and rapidly discerned the need for neurological care, training, and research.

During his tenure at the Veterans Administration, Bailey thought he had two major missions: to provide the veterans with high-quality medical service and to establish neurology as a specialty. At that time, university departments of neurology were still either divisions within a department of medicine or were submerged in departments of neuropsychiatry. Seeking to increase the training of neurologists, Bailey had allies in the American Academy of Neurology because he had been one of its founders and served as its second president in 1949-1950.

TOWARD NEUROLOGY LEGISLATION: VOLUNTARY HEALTH AGENCIES

According to Bailey,[8] the enabling legislation for NINDB developed mainly in response to the rising power of voluntary health agencies. The 1949 House of Representatives hearings on several related bills tell the story.

Each agency proposed separate institutes: one each for multiple sclerosis, cerebral palsy, and epilepsy. Arthritis and leprosy were also considered. The House committee, led by Representatives Robert Crosser, Percy Priest, and Andrew Biemiller, however, argued that such an approach was wasteful because it duplicated functions. Instead, they presented an Omnibus Bill that was linked to a national health insurance proposal and also to a bill for the training of nurses and other health professionals, as well as other measures. Representative Biemiller introduced the final bill in the House and Senator Pepper introduced a parallel bill in the Senate.

TOWARD LEGISLATION: CONGRESSIONAL HEARINGS

The bills that would ultimately establish NINDB led to hearings on the proposals in the House of Representatives.[28] Witnesses met with the committee in

May and June 1949. Several separate disease-specific institutes were considered along with one for national health insurance. The research proposal featured training for neuroscientists, provided grants, and established an intramural program.

Supporting witnesses who gave testimony, however, were few in comparison with today's activist advocates. The witnesses emphasized the need to improve research. The Multiple Sclerosis Society, only two years old, was well represented by a team that included Sylvia Lawry, its founder, Cornelius Traeger, its executive director, and two famous neurologists who served on its board, Tracy Putnam and Houston Merritt.

Others, such as Senator Charles W. Tobey, a Republican from Maine, described how their lives had been affected by neurological disease. Tobey presented an emotional depiction of his daughter's struggle with multiple sclerosis. He also told of his chance encounter with the eminent shipbuilder Henry Kaiser, whose son had also been affected, and how the fathers had commiserated over the plight of their children. These personal revelations made Tobey's testimony all the more poignant.

Eleanor Gehrig also testified for the MS Society. Her husband, Lou Gehrig, the famous Columbia University athlete and New York Yankee slugger, had died of amyotrophic lateral sclerosis. The word "sclerosis" served to link two quite different diseases but nevertheless made the point; research was needed.

Representatives for two other voluntary agencies also testified. One persuasive witness was William Lennox, a highly regarded professor of neurology at Harvard and one of the first superspecialists, a pioneer in the clinical investigation of epilepsy. It was up to members of local organizations to support cerebral palsy because no national organization had yet been formed. Leonard Goldenson testified (he was later to head ABC television) and became the leader of the ultimately unified national voluntary group, United Cerebral Palsy. In that capacity he became a driving force for research in birth injuries and perinatal diseases.

Tracy Putnam reappeared; he had first testified for multiple sclerosis, now, he spoke for both epilepsy and cerebral palsy. Several individuals supported victims of leprosy. Proponents of an arthritis institute also appeared. Whatever their particular interests, all the advocates emphasized the paucity of knowledge, the severe limitations of available treatment, and the difficulty of finding physicians expert in the diseases.

But the committee heard nothing of stroke, brain or spinal cord injury, brain tumors, muscular dystrophy, other genetic diseases, or infections of the nervous system – diseases and conditions that also desperately needed research but had no advocates. Neither the American Neurological Association (founded in 1874) nor the American Academy of Neurology (founded a year before the hearings) sent a representative or a statement. By today's standards support for the bill was limited, but it was sufficiently powerful to garner votes for the bill and the time was ripe.

HOW BLINDNESS WAS ADDED

Not a single witness mentioned blindness at the hearings on the bill for the neurological institute. Mrs. Lasker related how vision research became part of the institute's mandate.[29]

> Now, the way the word "blindness" got into the Neurological Diseases Institute is this: during the Spring of 1949, Miss Mildred Wiedenfeld, Dr. Hinsey of Harvard, and Mr. Ulmer of Ohio came to see me about the problem of blindness in the United States. I had not thought much about this problem, as I had not had anybody close to me who was blind, and I had not realized how little was being done for research in this field. I was grateful to them for pointing this problem out to me, so I telephoned Congressman Biemiller of Wisconsin, who was in charge of the legislation in the Interstate and Foreign Commerce Committee, and asked him if he wouldn't like to introduce a blindness institute bill. Biemiller said "Why yes I will." This surprised me, this prompt agreement, and I said, "Well, you sound very cooperative, Andy; how do you happen to be so interested?" He replied to me quite simply, "My mother was blind."
>
> He did introduce the bill in the House, and as it was too late to have a separate bill introduced in the Senate, I asked Senator Murray, who was holding the hearings, as he was the Chairman of the Committee on Labor and Public Welfare, to include blindness in the omnibus bill. It was included with the neurological diseases in an institute called the National Institute of Neurological Diseases and Blindness, entirely as a result of my suggestion. The whole blindness thing was just done like that, because these men were all in sympathy with the idea.
>
> But it came about after a big debate which Senator Pepper had with Norman Topping [Associate Director, NIH] about the need for additional institutes, which Pepper naturally won.

THE BILL BECOMES LAW

The compromise "Omnibus Medical Research Bill," rather than creating multiple institutes, called for the establishment of two separate institutes, a National Institute of Neurological Diseases and Blindness and one for Arthritis and Metabolic Diseases. It also gave the Surgeon General an important new power, the option of creating new institutes – or discontinuing old ones. All previous NIH laws had stipulated governance by Advisory Council; the bill for NINDB, for the first time, required layperson members of the Council. It included provisions for constructing laboratory facilities throughout the country and for training investigators. Representative Percy Priest[30] introduced the bill in the House and Claude Pepper[31] sponsored the Senate version. Slight differences between the two chambers were resolved in a compromise bill that was passed by voice vote.[32]

President Harry S. Truman ultimately signed the bill into law, but he apparently had concerns about increasing institutional compartmentalization. Roger W. Jones (Assistant Director, Legislative Reference in the Bureau of the Budget, Executive Office of the President) summed up these concerns in a letter dated August 10, 1950,[33] and addressed to William J. Hopkins (Executive Clerk of the Office of Management and Budget):

> For some time there has been concern within the Executive Office of the President over the proliferation of separate institutes within the Public Health Service for each disease category. S. 2591 will bring the total of separate statutory institutes to six. As late as June 15, 1949, the Director of the Bureau of the Budget indicated that the legislative proposals to continue the authority of the Surgeon General to establish additional institutes and to abolish institutes created by administrative order in the Public Health Service were meritorious because they would "avoid the rigidity and administrative complexity which inevitably results from the creation of a series of statutory research institutes, each for the purpose of doing research in a particular segment of the medical field."

Jones also mentioned that President Truman might veto the bill:

> The addition of these two new statutory institutes makes even more serious the departure from the desired fluidity of organizations stressed in the abovementioned letter. While a veto does not seem feasible because of the worthiness of the objectives and the popular support and need for medical research, it is our conviction that the defects of this bill should be stressed so as to discourage future attempts to establish by statute other separate institutes. It is therefore recommended that upon signing the enrolled bill, the President issue the enclosed statement, noting the undesirable aspects of the trend toward separate institutes and calling upon the Surgeon General of the Public Health Service to coordinate his research and research grant programs as much as he can.

Truman never publicly made that statement. At the bottom of a copy of this letter, a handwritten note added by William Hopkins remarked that: "After discussion with Mr. Murphy, the President decided not to issue a statement." Hopkins was referring to Charles S. Murphy, Special Counsel to the President. Hopkins, however, did not offer any explanation for the change in plans.

Naturally, Mrs. Lasker commented on the next dramatic scene,[34] including the views of Norman Topping, then Associate Director of NIH:

> When Biemiller let me know of the passage of the bill, I had no apprehension there would be any difficulty getting it signed. I phoned Matt Connolly at the White House to say that I thought the sponsors of the two new institutes bill should be photographed with the President when he signed it. Matt Connolly said he'd let me know when the bill came to the President's desk. Within a week he phoned me and dropped what for me was a bombshell. He said, "I'm

> afraid the bill won't be signed." I gasped, "Why not?" He said, "The Budget has written a memorandum attached to the bill saying, 'While the purposes of the bill are all right, the methods of establishing more institutes to get these results are bad.'"
>
> I suspect that the Public Health Service, in order to save face, had gotten after the Budget or written the memo and got somebody low down in the Budget to attach this to the bill.
>
> Q. This was Topping's point of view?
> A. Yes, I suspect that. I hung up the phone in despair and I called Anna Rosenberg and Florence Mahoney. Anna called David Niles. I called Clark Clifford. Florence called, I'm sure, Clifford, too. Between us all, the memorandum of the Budget was detached from the bill and lost, and within a few days President Truman signed the bill.
>
> Q. He had not seen the memo?
> A. Evidently not. These are the chances—
>
> Q. There was no further effort on the part of the Budget people then?
> A. Yes. I took a deep breath but next came getting the supplementary appropriations so that the two new institutes just established would mean something. The Public Health Service was willing to put a few funds that had been used for similar purposes in the NIH into these two new institutes to start, but it didn't amount to much. They had amounted to $578,000 for the National Institute of Arthritis and Metabolic Diseases and for Neurological Diseases and Blindness nothing at all in fiscal '51, not one cent.

The bill became law when the President signed it on August 15, 1950,[35] and a new world of neuroscience commenced.

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2

FIRST STEPS

THE FIFTIES

In 1950, when legislation carved out the Institute of Neurological Diseases and Blindness from the National Institute of Mental Health, the new institute had a mandate but no budget from Congress. Robert H. Felix, the director of NIMH, was given responsibility for establishing the structure and leadership of the fledgling organization.

Trained in psychiatry at the University of Colorado, Felix had joined the Public Health Service in 1933. For a time he was Director of the federal Narcotics Treatment Center in Lexington, Kentucky, and then chief of the Mental Hygiene Division of the Public Health Service from 1944 to 1949. In that position, he helped formulate the law that established NIMH and was then appointed director of the new institute.

Felix had spent his early years working in a state mental hospital system where he recognized several major problems in the delivery of mental health care. The first was that each state controlled its own programs and policies, which led to uneven quality of care and accessibility from place to place. Within a state, local bureaucracies resisted change. There was also little or no antipsychotic drug therapy and virtually no biologic research.

To correct these deficiencies, Felix envisioned a new role for a federal research center in mental health, one that could also confront a fourth challenge – the dominance of psychoanalysis in medical schools and training programs. Felix wanted to take advantage of the unique resources at NIH to create a new brain "science" for psychiatry, one that would rely more on biology than biography to explain and treat mental illness.

At NIMH, Felix soon consulted with the renowned academicians, Houston Merritt in neurology and John Romano in psychiatry.[1] Then, Felix had the foresight and courage to hire Seymour Kety as the first scientific director at NIMH. Kety had had no training in psychiatry and was only 35 years old, but he was already famous because of his studies of cerebral blood flow in

Seymour Kety, M.D., was the first scientific director of NIMH and first director of the intramural program at NINDB