

VISION

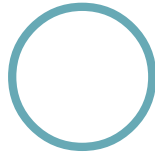


SIXTY YEARS *of the* SCIENCE AND ART *of* RADIOLOGY *at* UT SOUTHWESTERN MEDICAL CENTER



Taking an X-ray image with early Crookes tube apparatus. An induction coil, on the table against the wall, provides high voltage to drive the rays in a partially evacuated gas tube; behind it, at the back corner, a motor-operated interrupter repeatedly breaks the direct current supply to create magnetic-field changes for induction. The large flat disk in front of the table is the power control, made of an adjustable resistor. A rack on the wall holds spare gas tubes. The complicated interactions between the electrical characteristics of the tube, its gas pressure, and the properties of the rays it emitted were not well understood. The Crookes tube is visible at the center. Much of the operator's expertise was the result of knowing the tubes and choosing the right one for the task. The standing man is viewing his hand with a fluoroscope screen. No precautions against radiation exposure were taken because its hazards were still unknown.

INTRODUCTION



IN THE AFTERNOON OF NOVEMBER 8, 1895, while working in his laboratory at Würzburg University, German physicist Wilhelm Conrad Röntgen produced and detected electromagnetic radiation in an unnamed wavelength that came to be known as the X-ray. The invisible rays could penetrate air, solid objects and living tissues, making it possible to create images on photographic plates or phosphorescent screens. Soon, Röntgen's rays would be applied to medical diagnosis and treatment throughout the world.

Although it wasn't officially established until the appointment of Frederick Bonte, M.D., as its first chair, in 1956, the Department of Radiology at UT Southwestern Medical Center can trace its history to the introduction of X-ray technology in North Texas, eight years after Röntgen's discovery. The department has been at the forefront of this rapidly advancing field ever since. From using plain film imaging in the early days to the introduction of ultrasound, magnetic resonance and computed tomography, UT Southwestern radiologists have eagerly embraced each innovation so they could provide faster and more accurate diagnoses and improve patient care.

This book chronicles some of the department's most influential people, celebrates its singular successes, and, hopefully, inspires a sense of pride and wonder at the progress and growth that have taken place. However, that inspiration will quickly fade without also looking to the future. Today's UT Southwestern Department of Radiology is full of possibilities, thanks to an outstanding clinical and research faculty recruited from within its ranks and from around the world. Additionally, a top-notch support staff, highly valued clinical partners, and a continuum of outstanding leaders have propelled the department to world-class status.

As you peruse these pages, consider the many people who helped create the Department of Radiology. In each photograph and vignette, you'll be reminded of where the department has been, and get an idea of where it is headed for many years to come.

TABLE of CONTENTS

PAGE 1	CHAPTER ONE	A WONDROUS DISCOVERY: The first X-ray machine arrives in Texas, setting the stage for an emerging medical specialty and providing a link between radiology's beginnings and UT Southwestern.
PAGE 15		<i>The Martin Family</i> James Martin not only introduced X-ray technology to Texas — he established a radiology dynasty.
PAGE 19	CHAPTER TWO	GROUNDBREAKERS, GROWTH AND GRASSHOPPERS: The department's first chair begins assembling talented radiologists, Parkland hospital becomes a scene of national tragedy, and the "grasshopper doctor" helps establish the National Organization for Women.
PAGE 39	CHAPTER THREE	GAINING MOMENTUM, ACHIEVING RENOWN: Department faculty members author a landmark textbook and make pioneering contributions to the burgeoning science of nuclear medicine.
PAGE 51		<i>Frederick Bonte, M.D.</i> Although he never intended to become a radiologist, Frederick Bonte made a lasting impact on the specialty.
PAGE 57	CHAPTER FOUR	INNOVATIONS AND EXPANSION: The man who would become the longest-serving department chair assumes the post, ushering in a new era of radiology research.
PAGE 69		<i>Jack Reynolds, M.D.</i> As a teacher, Jack Reynolds was so effective that many medical students asked to take his class a second time.
PAGE 73	CHAPTER FIVE	NEW TECHNOLOGIES, NEW TECHNIQUES: UT Southwestern helps bring magnetic resonance imaging to Texas, attracts leading researchers and radiologists from around the world, and makes notable advances in angiography.
PAGE 85		<i>Robert Parkey, M.D.</i> In addition to serving as department chair for 30 years, Robert Parkey continued advancing the science of nuclear medicine.
PAGE 91	PROFILES IN TEAMWORK	IT TAKES A TEAM: From its beginning, the department relied on its classified staff to support the faculty in its clinical, educational and research endeavors.
PAGE 99	CHAPTER SIX	TAPPING THE POTENTIAL: Department radiologists develop new devices to enhance the view of tumors for surgery and diagnosis, and UT Southwestern becomes a leading research center.

TABLE of CONTENTS

<i>Helen Redman accomplished many “firsts,” and set the standard for academic radiologists.</i>	PAGE 109
	<i>Helen Redman, M.D.</i>
CHAPTER SEVEN	PAGE 113
<i>BUILDING ON SUCCESS: The medical center adds important imaging facilities with advanced technological capabilities and marks 10 years since the first MRI scan was performed.</i>	
	PAGE 123
<i>Tom and George Curry left their mark on a vibrant radiology department.</i>	<i>The Curry Brothers</i>
CHAPTER EIGHT	PAGE 127
<i>MILESTONES AND MEDICAL MARVELS: The 100th anniversary of the discovery of the X-ray is celebrated, a distinguished faculty member becomes the first woman president of the Radiological Society of North America, and new construction expands opportunities for research and discovery.</i>	
CHAPTER NINE	PAGE 139
<i>COLLABORATION AND COOPERATION: An imaging research center is established, and an imaging building opens, making it possible to work with collaborators from across the region.</i>	
	PAGE 151
<i>Neil M. Rofsky set the stage for the department’s continued growth.</i>	<i>Neil M. Rofsky, M.D.</i>
CHAPTER TEN	PAGE 157
<i>INSPIRED BY EXAMPLE: The department’s fourth chair picks up where his mentors left off, and the long-held dream of a cyclotron facility is finally realized.</i>	
CHAPTER ELEVEN	PAGE 169
<i>NO LONGER BEHIND THE SCREENS: An ambitious recruiting effort lays the foundation for a world-class radiology department.</i>	
RADIOLOGY LEADERSHIP	PAGE 182
ENDOWED PROFESSORSHIPS AND CHAIRS	PAGE 183
<i>Individuals and organizations have endowed a number of faculty positions, making it possible for the department to recruit and retain top clinicians, educators and researchers.</i>	
AUTHOR’S NOTES	PAGE 191

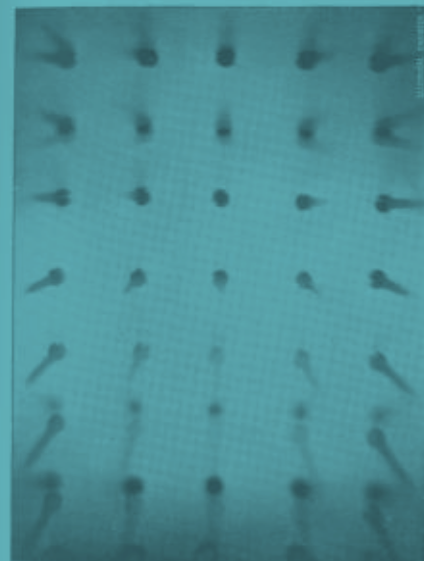
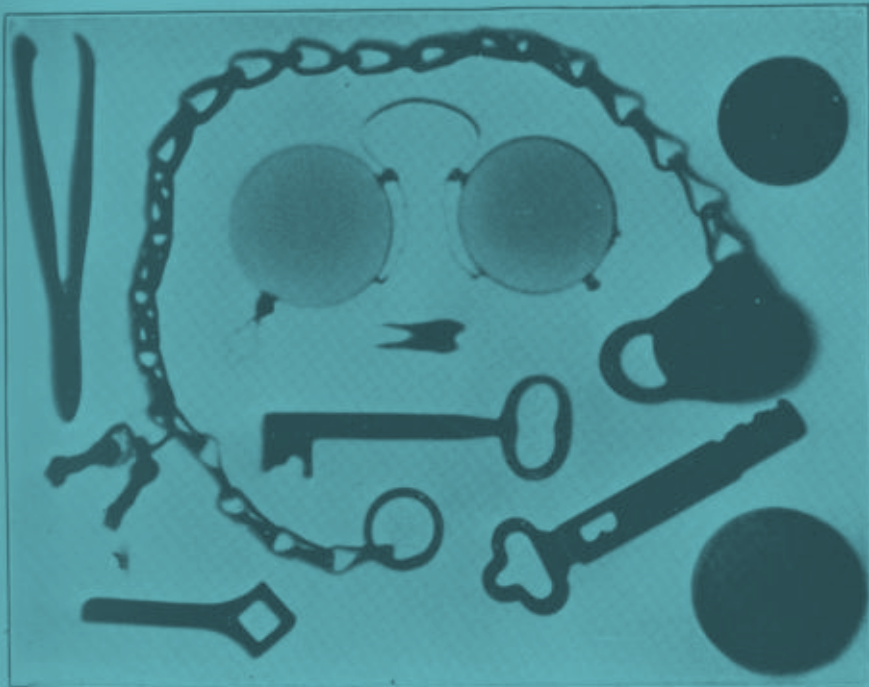


Fig. 51.

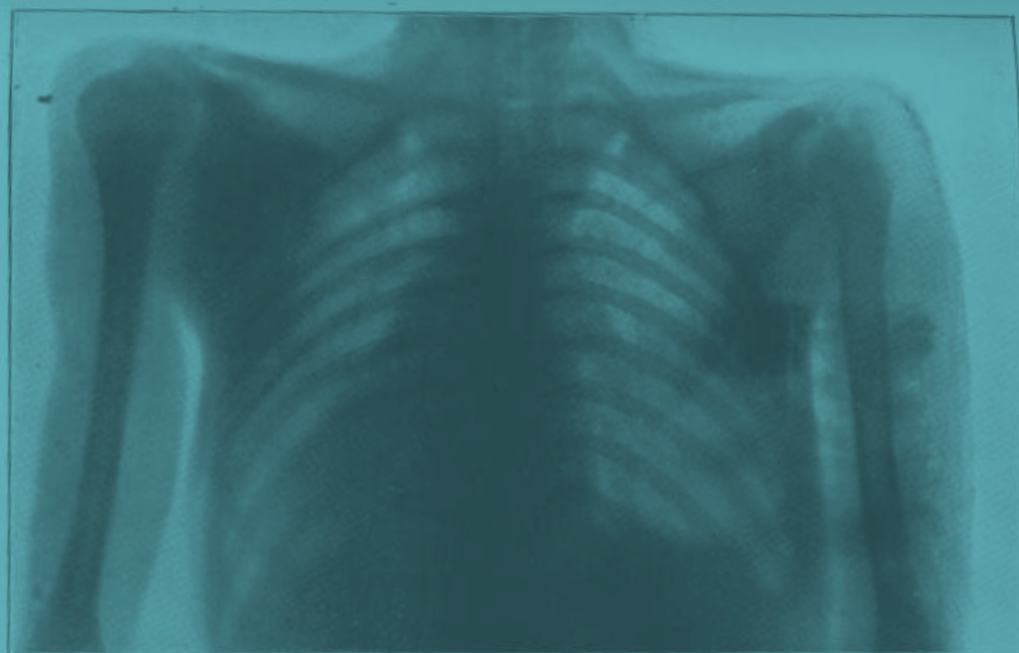


Fig. 73.



A WONDROUS DISCOVERY: X-RAYS

Early X-ray Images by William James Morton, originally published in
The X-ray: Photography of the Invisible and its Value in Surgery (1896)

Reprinted from *Hidden Treasure: The National Library of Medicine*,
courtesy of Blast Books

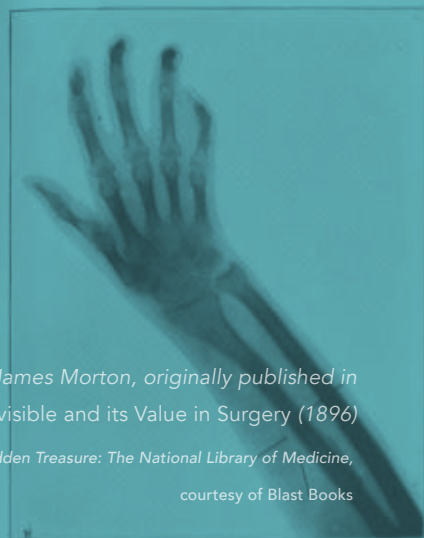
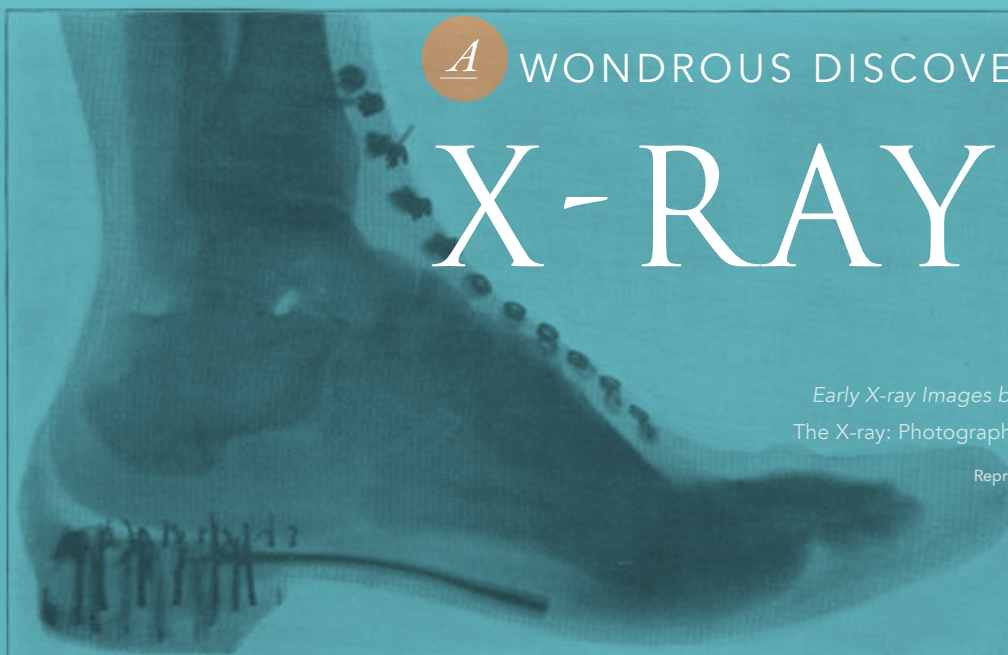


Fig. 68.

CHAPTER ONE

AT A HORSE TROUGH in the Texas town of Hillsboro, two men struck up a conversation and recognized a kindred passion for a new, wondrous discovery. It was 1903, eight years since the German physicist, Wilhelm Conrad Röntgen, Ph.D., had discovered the X-ray.

James Martin, M.D., invited George Bond, M.D., to see his new static X-ray machine. Because the device was low-voltage, he used it primarily to treat skin cancers and to make “skiagraphs,” or X-ray images, of body parts. Bond told Martin that he had actually ordered his own X-ray machine, which was en route from New York. Both men would later limit their private practices to X-ray images and electrotherapeutics.

Although Röntgen received the first Nobel Prize in physics in 1901, the medical establishment was reluctant to adopt the science. In a 1965 historical report for the Texas Radiological Society, Bond’s son, Thomas, wrote the following account:

“The specialty had a very stormy course over the next several years. It was not readily accepted, either in diagnosis or therapy, by the profession. Many physicians deplored the advent of X-ray in the treatment of fractures, claiming that every doctor should acquire sufficient skill to diagnose fractures and ascertain the apposition and alignment of the fragments by touch. In their opinion, the use of X-ray would eventually cause medical men to lose this ability and they would not always have access to X-ray for the diagnosis.”

Martin, however, was undeterred. He set up an office over a Hillsboro drugstore, and became a member of the American Roentgen Ray Society in 1904. His interest in treating skin cancers led to a presentation at the Texas Medical Association’s annual meeting and a published article.

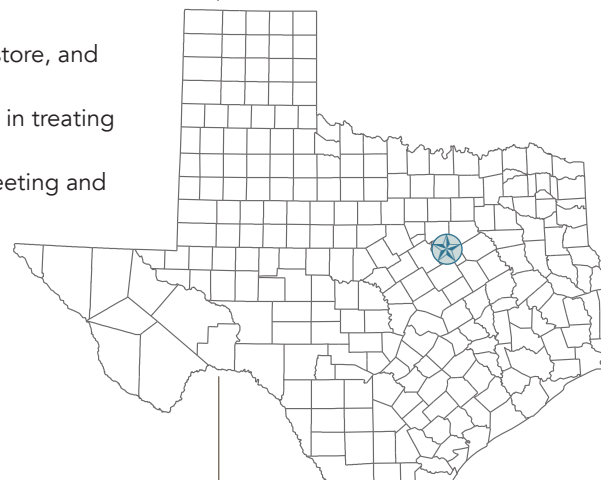


NOVEMBER 8, 1895

German physicist Wilhelm Conrad Röntgen's first X-ray image is of his wife's hand and wedding ring.

1903

James Martin and George Bond meet in Hillsboro.



1906

James Martin moves to Dallas and becomes professor of Roentgenology.



MAY 13, 1914

James Martin and George Bond cofound the Texas Radiological Society.

Edward Cary, M.D., the first dean of The University of Dallas Medical Department and then Baylor College of Medicine, heard Martin's presentation and invited him to become the medical school's first professor of Roentgenology. Martin accepted the offer.



Edward Cary

In 1906, Martin relocated to Dallas to establish one of the first laboratories in the southwest devoted to using electrical methods and X-rays in medicine. By several accounts, Martin was a formidable figure, standing 6 feet, 6 inches tall. Because of his height, he often joked that he was the highest medical authority in the state.

Perhaps to prove his point, when a young competitor opened a new practice and suggested Martin leave Dallas, Martin made it known when he'd be walking downtown so the two could meet. The competitor came out of a bar and saw Martin with a hogleg pistol in a leg holster, his coat strategically tucked behind the handgun. The young man left, and was never seen in Dallas again.

At Baylor, there were no textbooks for radiology. So in 1912, Martin published *"Practical Electro-Therapeutics and X-Ray Therapy,"* which contained photographs of patients treated for skin and lip cancers.

Two years later, on May 13, 1914, Martin and Bond, who had relocated to Fort Worth and established his own successful practice, cofounded the Texas Roentgen Ray Society. Known today as the Texas Radiological Society, the



organization's first meeting took place in Houston during the annual Texas Medical Association session. Twenty-three physicians participated in creating the first state radiological society in the nation. Bond served as the first president (1914-15), followed by Martin (1915-16).

It was during Martin's presidency that Parkland hospital became affiliated with Baylor College of Medicine. Half the hospital's staff was made up of medical school faculty, the other half were non-faculty members in good standing with the Dallas County Medical Society.

Over the years, Martin became a sought-after expert on skin cancer. In 1937, he became the first president of the American College of Radiology from Texas.

At first, Martin's son, Charles L. Martin, had not planned to become a physician. In 1914, he graduated from The University of Texas at Austin, receiving a degree in electrical engineering. Yet his father persuaded him to consider medicine, even offering to pay for him to attend Harvard Medical School in Boston.

Image courtesy of Dallas County Medical Society



James Martin (left) and Charles Martin

1920

James Martin and his son, Charles Martin, begin practicing radiology in Dallas.



World War I
Student Army Training
Corps collar disc.

The younger Martin's second year at Harvard was interrupted by World War I. He enrolled in the Student Army Training Corps and began a residency program in radiology at Massachusetts General Hospital. It was during this time he published one of his first scientific papers, "Roentgen Ray Study of the Great Vessels," in the *Journal of the American Medical Association*.

In May 1920, the younger Martin received a letter from his father asking him to return to Texas. His mother was ill, the elder Martin explained, and he hoped his son would join him at Baylor. In 1925, Charles Martin became a full professor at the medical school.

For 20 years, the two radiologists practiced and taught at Baylor. At the request of the American College of Surgeons, the younger Martin organized Texas' first accredited tumor clinic, at Baylor, in 1931, and was its director for eight years. He became a leading expert on radium needle implantation. He also served as president of the Texas Radiological Society, from 1925 to 1926.

But in 1940, the Martins had a disagreement with Baylor's leaders over equipment ownership and finances. When Baylor asked to sever all connections, father and son moved their practice to the Gaston Episcopal Hospital and opened the Martin X-Ray and Radium Clinic.

The Martins weren't the only ones to leave Baylor. In 1939, under Cary's leadership and with the support of philanthropist Karl Hoblitzelle, a group of prominent Dallas citizens organized the Southwestern Medical Foundation. Its mission: to promote medical education and research in Dallas and in the region.



1939

The Southwestern Medical
Foundation is chartered.



Karl Hoblitzelle



The first faculty members of Southwestern Medical College met in 1943. From left, Charles Duncan, George Caldwell, Joseph Hill, Robert Lackey, Donald Slaughter (Dean), Lewis Waters, Herbert Tidwell, MacDonald Fulton and William Looney. Behind Slaughter is a bust of Edward Cary that was presented to Cary in 1929 by the Baylor University College of Medicine faculty.

When Baylor University elected to move its school of medicine from Dallas to Houston in 1943, the Foundation formally established Southwestern Medical College as the 68th medical school in the U.S.

J. Davis Spangler, M.D., a local radiologist and president of the Dallas County Medical Society, promised his organization's full support and rallied community members to back the new school.



J. Davis Spangler

"A NEW MEDICAL SCHOOL has been completed this year and is now recognized by all as an A-1 institution. The Southwestern Medical Foundation has hit its stride and will, with your continuing support and cooperation, make Dallas the Southwest's greatest Medical Center."



1940

The Martin X-Ray and Radium Clinic is established in Dallas.

MAY 5, 1943
Southwestern
Medical College is
officially established.

Several years later, Spangler joined Southwestern Medical College's faculty as an assistant clinical professor. In his final president's letter to medical society members, dated January 13, 1944, Spangler wrote, "A new Medical School has been completed this year and is now recognized by all as an A-1 institution. The Southwestern Medical Foundation has hit its stride and will, with your continuing support and cooperation, make Dallas the Southwest's greatest Medical Center."



Southwestern Medical College was originally housed in army barracks at 2211 Oak Lawn Avenue.



Southwestern Medical College's Army Specialized Training Unit 1809, known as Company A.

Because the school emerged during the Second World War, building supplies and personnel were in short supply. The school's first location, at 2211 Oak Lawn Avenue, had prefabricated plywood buildings. The Dallas-based Eighth Service Command of the U.S. Army authorized construction of the barracks, known as "the shacks," and provided finances for salaries, tuition, and fees. The Army figured supporting Southwestern would provide a steady supply of doctors. At that time, it was estimated Dallas had lost half of its physicians to the armed forces.

Classes in the shacks began on September 27, 1943. Southwestern reached an agreement with the City of Dallas and with Dallas County to provide medical services to Parkland hospital patients in return for using its clinical facilities for teaching.



"The shacks," viewed from across Oak Lawn Avenue.

On March 20, 1944, 61 students graduated from the medical school. Thirty-eight were commissioned as first lieutenants in the Army medical corps, and 15 became medical officers in the Navy. In a commemorative paper celebrating the medical school's 25th year, Dallas radiologist and 1944 graduate E. L. Haag Jr., M.D., shared his memories of that time:

"The military didn't cause us much trouble at all...they took over the medical school just to keep us in medical school, so we didn't have much to worry about. I think this was the first time in history that a whole medical school was inducted into the Army."

Haag also recalled George Caldwell, M.D., a professor of pathology, admonishing a student who had fallen asleep in class. "How can you sleep in class?" Caldwell asked.

"If I knew as little pathology as you do, I couldn't sleep at night."



MARCH 20, 1944
First class of students
graduates from South-
western Medical College.

Inspection of senior platoons by commanding officer Colonel Phillips at Southwestern Medical College, 1944.

Nine full-time faculty members taught basic sciences. The remaining faculty consisted of part-time practicing clinicians, including the Martins. The elder Martin was named professor emeritus of radiology, and remained so until his death, in 1947. Before he died, the Texas Radiological Society designed and delivered a bronze plaque with the signatures of his peers, recognizing his pioneering work in the field. The younger Martin was appointed professor of radiology, and became the unpaid chair of the radiology division from 1943 to 1956.

George Caldwell lectures Southwestern Medical College students in 1944.

In a personal letter, Charles Martin noted, "I was made a member of the Board of Directors of the new school and spent much time in selecting competent new deans and teachers, and working with Dr. Cary in attempting to set up an acceptable new school."

Drawing of proposed plan for a new campus of Southwestern Medical College at Harry Hines Blvd. and Inwood Road.



Future site of Parkland Memorial Hospital and Southwestern Medical School along Harry Hines Boulevard, 1946.

Throughout 1945, the Southwestern Medical Foundation and its donors raised money to purchase 62 acres along Harry Hines Boulevard, connected to a tract of land where the new Parkland hospital would be built.

In 1946, Jarrell Miller, M.D., a respected Army surgeon, became a full-time professor and director of radiology at Parkland hospital. He served in that position until 1949, when he resigned to become director of radiology at Baylor Medical Center in Dallas. Miller would one day return as a clinical professor of radiology at UT Southwestern and director of radiology at St. Paul Hospital.



SEPTEMBER 26, 1947

James Martin dies after a lengthy illness, 11 weeks before his 80th birthday.

The same year Miller left, the medical school began a significant transformation. Due to the growing financial needs of Southwestern, Cary and other school leaders concluded the institution must be absorbed into a well-funded university system. After



The Medical Advisory Council listens to a report from C.A. Bunde (left foreground). Members included (seated from far left) Guy Witt, Arthur Grollman, John Goode and Tinsley Harrison; and (standing from left) Charles Martin and Donald Slaughter.

“TEN MEMBERS of our Committee were appointed to travel to Austin and appear before committees of the House and Senate, and I think we did a good job...We were delighted when we learned that the legislature had granted our request and we would be converted into a branch of the University of Texas.”

— Charles Martin

careful consideration The University of Texas at Austin was selected. But for such an affiliation to exist, the UT System Board of Regents would have to submit a request to the State Legislature to create a bill authorizing support.

SEPTEMBER 1, 1949

The institution's affiliation with the University of Texas led to its first name change: Southwestern Medical School of The University of Texas.



In a letter, Martin shared details about convincing delegates to vote favorably.

"Ten members of our Committee were appointed to travel to Austin and appear before committees of the House and Senate, and I think we did a good job. I used colored slides to show the good results that we had obtained in treating certain forms of cancer with X-rays and radium. During an intermission members of the Legislature asked me many questions, asserting that they did not know that cancer was curable. We were delighted when we learned that the Legislature had granted our request and we would be converted into a branch of The University of Texas."

On September 18, 1949, Southwestern Medical College became part of The University of Texas System and was renamed Southwestern Medical School of The University of Texas. The entering class of 1949 grew from 64 to 100 students.

Seven years later, in 1956, the radiology division of the Department of Surgery would officially become the Department of Radiology with the appointment of its first chair, Frederick J. Bonte, M.D.

Medical College Times

JULY 1943

TWELVE PAGES IN ONE SECTION

FREE



Medical students acquire experience by treating charity patients in nearby Parkland Hospital

Foundation Backs New Med School

By Dr. E.H. Cary

President, Southwestern Medical Foundation

The medical progress in any community is largely associated with the development of medical education within the community.

The development of medicine in Dallas is a long and interesting story, but as the years have passed the practice of medicine has been of finer quality in all of the hospitals and homes because of the increasing merit of the educational venture of a few optimistic and high spirited doctors who could visualize the future even in the turn of the century.

The Southwestern Medical Foundation was created for the purpose of carrying forward the work which had been accomplished throughout these 40 odd years by these medical men and their associates. It has fallen the lot of the Foundation to go a step further and to assume the direct obligation of financing and managing the Southwestern Medical College, which the Foundation has created, with practically the same faculty which existed in Dallas, and many others of distinction which have been added.

The Foundation early projected a very extensive program of erecting needed buildings for the medical school. The trustees of the Foundation selected a large plot of land adjoining the Parkland (city-county) Hospital and had plans drawn for the future development of a great Medical Center, quite near the City-County Hospital and the already existing Pediatric Center. This development is to be correlated with the new buildings on Parkland Hospital grounds which are needed to meet the requirements of a growing city, which finds it necessary to serve the underprivileged who need medical care.

The first building of the Foundation will be a modern home for the medical school, which is now housed in a group of prefabricated buildings which have been so constructed that for the period of the war they answer every purpose.

On the grounds space has been provided for development of research. The recent discovery of the efficacy of penicillin in the cure of many diseases, even more effectively than the sulpha drugs, has opened a new field. From which penicillin is captured, only suggests the possibilities of what may be discovered by those interested in research.

One of the great financiers of all times claimed that he got greater dividends out of the money spent in medical education than in any other activity in which he had been interested.

(Excerpts from an article written by Cary in the Nov. 1943 issue of Dallas.)

Allied Forces Seize Islands; Churchill Predicts More Fighting

WASHINGTON, July 1 (AP) - Reports from abroad indicate that the war climate is becoming more and more volatile. Allied forces have seized islands off the New Guinea coast and made two successful landings in the Solomons. From London Prime Minister Winston Churchill predicts heavy fighting this summer in the Mediterranean.

Allied headquarters in Australia announced that allied land, naval and air forces under the personal direction of Gen. Douglas MacArthur have occupied the Trobriand and Woodlark Island groups between New Guinea and the Solomon Islands. They are attacking the neighboring New Georgia Islands and are engaging Japanese land forces near Salamaua on New Guinea.

A communique said occupation of the Trobriand and Woodlark groups was accomplished without opposition, apparently unknown to the enemy. In the New Georgia group American forces have successfully landed on both New Georgia and Rendova Islands and are engaging the enemy's defense.

"All elements of ground, naval and air forces are being employed in the closest synchronization," the communique said.

During a speech in London Churchill sent a warning to the Germans that heavy blows in the Mediterranean are due. "Very probably there will be heavy fighting in the Mediterranean and elsewhere before the leaves of Autumn fall," Churchill said.

He emphasized that Allied unity is crucial and declared that upon British-American cooperation depends, more than any other factor, the immediate future.

"Acting together we can help all nations safely into harbor. If we divide all will toss and drift for a long time on dark and stormy seas."

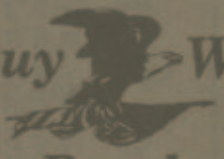
In This Issue:

This month Southwestern Medical School celebrates its 40th anniversary. The school's evolution is chronicled by those who have participated in its growth. Page 1. See related stories pages 5-8.

TEACH YOUR CHILDREN WELL
UT Board of Regents name Ambulatory Care Teaching Center for James Aston. Page 3.

TRIP THE LIGHTS FANTASTIC
Ophthalmologist suggests revamping laser surgery technique for treatment of glaucoma. Page 9.

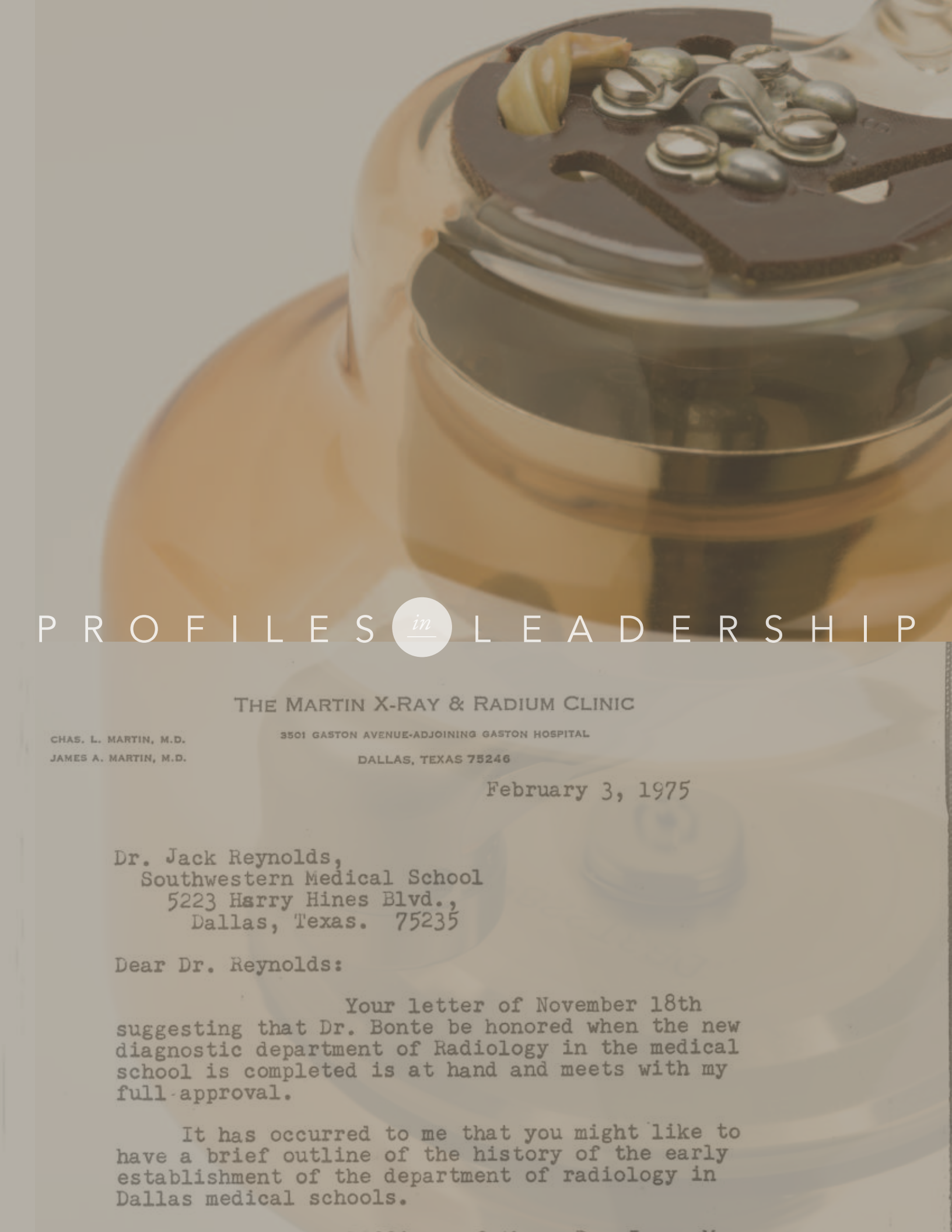
THE BUCK STOPS HERE
Linda Cadigan, newly appointed assistant to the president, will focus on philanthropic efforts. Page 2.

Buy  War
Bonds



Medical students in army training unit stand for inspection.

(All facts and quotes for this article were taken from the front page of the July 1, 1943 Dallas Morning News.)



PROFILES *in* LEADERSHIP

THE MARTIN X-RAY & RADIUM CLINIC

CHAS. L. MARTIN, M.D.

JAMES A. MARTIN, M.D.

3501 GASTON AVENUE-ADJOINING GASTON HOSPITAL

DALLAS, TEXAS 75246

February 3, 1975

Dr. Jack Reynolds,
Southwestern Medical School
5223 Harry Hines Blvd.,
Dallas, Texas. 75235

Dear Dr. Reynolds:

Your letter of November 18th suggesting that Dr. Bonte be honored when the new diagnostic department of Radiology in the medical school is completed is at hand and meets with my full approval.

It has occurred to me that you might like to have a brief outline of the history of the early establishment of the department of radiology in Dallas medical schools.

THE MARTIN FAMILY

AMES MARTIN'S EXTRAORDINARY LIFE took him from the small town of St. James, Missouri, to the burgeoning city of Dallas. After attending the Vichy Normal and Business Institute in Vichy, Missouri, he completed studies in general medicine at St. Louis College of Physicians and Surgeons. After graduating, in 1892, Martin visited an uncle who owned a Texas ranch. He decided to stay and eventually established a medical practice in nearby Hillsboro.

There, in 1903, he met George Bond, M.D., at a hitching post, where the two discussed the X-ray and their mutual interest in its use. Martin soon traveled to the St. Louis World's Fair, where he attended a meeting of the American Roentgen Ray Society. Not only did he become a member, he also purchased



James Martin

Reprinted with permission from
Baylor University Medical
Center at Dallas

Image courtesy of Dallas Country Medical Society



James Martin

and transported home the latest X-ray equipment. His interest in using X-rays against skin cancer had been piqued by one of William Allen Pusey's first articles on treating the disease.

In 1906, Edward H. Cary, M.D., invited Martin to become a professor of Roentgenology at Baylor College of Medicine. After moving to Dallas, he also taught at Southern Methodist University and authored the textbook, *Practical Electro-Therapeutics and X-Ray Therapy*.

Reprinted with permission from Baylor University Medical Center at Dallas



James Martin in his office at the Wilson Building in downtown Dallas.

In 1914, Martin and Bond established the Texas Radiological Society (TRS). Martin not only served as its president, but also as president of the American College of Radiology, the Dallas Radiological Society, the Physicians Club of Dallas, the Dallas Southern Clinical Society, and the Dallas County Medical Society.

He and wife, Emma, had one son, Charles.

Charles "Charlie" Martin had not planned to be a second-generation radiologist. He initially earned a degree in electrical engineering from the University of Texas at Austin. But after losing interest in engineering, the younger Martin pursued a medical education at Harvard Medical School in Boston. While there, he enrolled in the Student Army Training Corps and began a residency program in radiology at Massachusetts General Hospital.

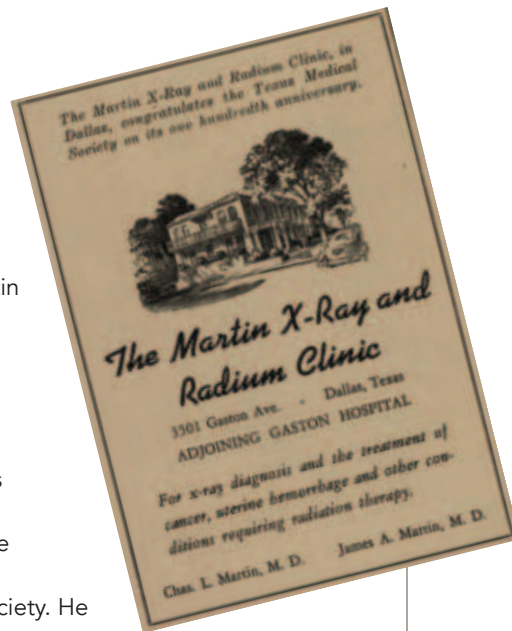
Following his 1919 graduation, Charles Martin returned home to practice at Baylor College of Medicine with his father. Together they also established the Martin X-Ray and Radium Clinic in Dallas. In 1943, the younger Martin became the unpaid chair of the new radiology division at UT Southwestern Medical Center, a position he held until 1956.

During his distinguished career, Charles Martin served as president of the TRS, the American Roentgen Ray Society, the American Radium Society, and the Dallas County Medical Society. He authored more than 103 scientific papers and, with his son, James, wrote the textbook "Low Intensity Radium Therapy."

James "Jimmy" Martin, son of Charles Martin and his wife, Mabelle, received his bachelor's degree from Rice University in Houston before heading to Harvard Medical School. The newly minted Dr. Martin then completed his internship and residency training at Massachusetts General Hospital.

In 1950, James became co-director of the Martin X-Ray and Radium Clinic in Dallas, then director from 1970 to 1981. From 1982 until his retirement in 1986, the youngest Martin served as chief of radiology at Gaston Episcopal Hospital in Dallas. He was also a faculty member of the radiology department at UT Southwestern for many years.

James Martin died in 1988. He and his wife, Glenna, had four daughters.



Charles Martin

Image courtesy of Dallas County Medical Society

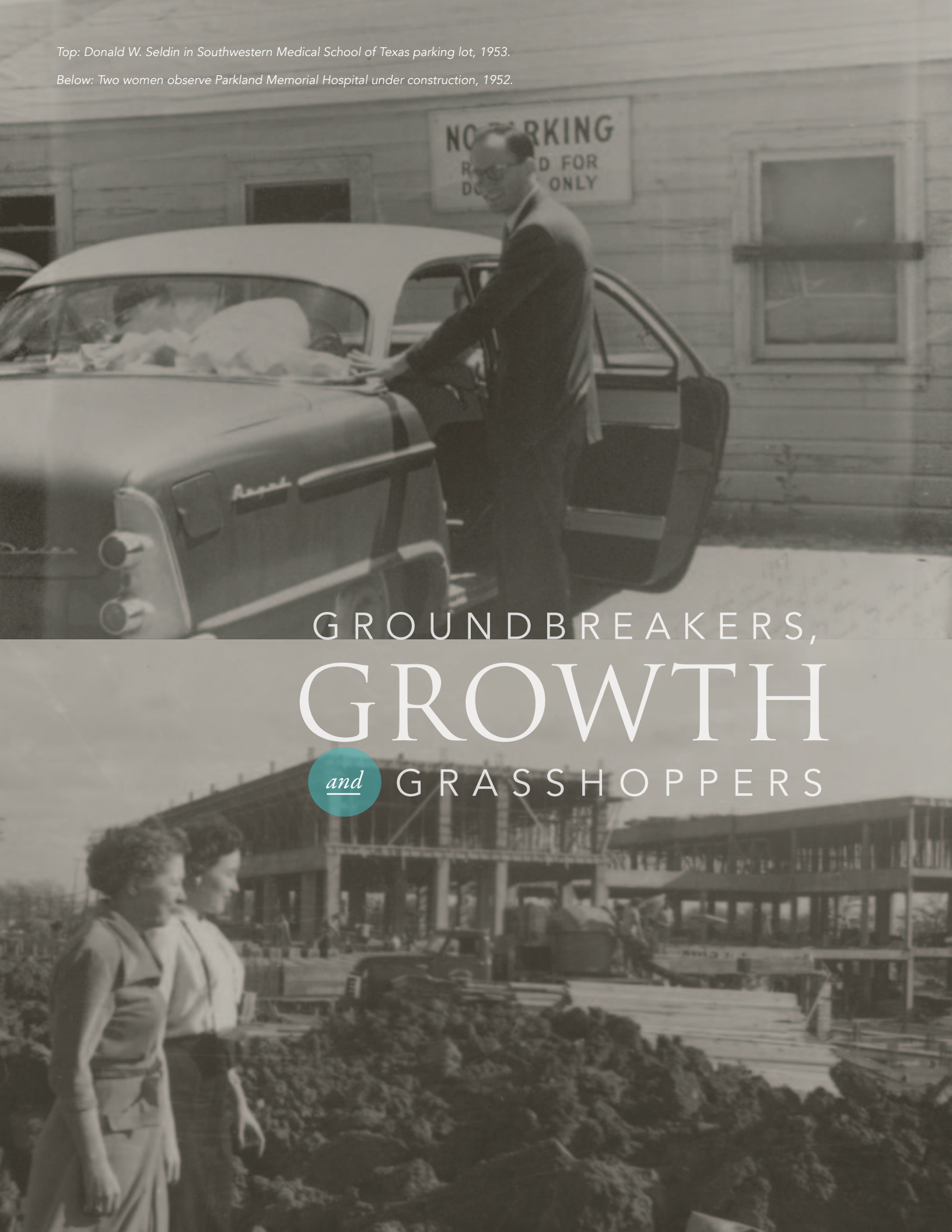


James A. Martin

Image courtesy of Texas Medical Association

Top: Donald W. Seldin in Southwestern Medical School of Texas parking lot, 1953.

Below: Two women observe Parkland Memorial Hospital under construction, 1952.



GROUNDBREAKERS, GROWTH *and* GRASSHOPPERS

CHAPTER TWO

WITH ITS NEW IDENTITY, the Southwestern Medical School of the University of Texas made steady progress. In 1952, Donald Seldin, M.D., was appointed chairman of the Department of Internal Medicine, beginning a long and distinguished career as one of the institution's builders and guiding forces.

Lee Radford, M.D., an assistant professor of radiology at the time of this publication, graduated from the medical school in 1956. He attended classes in the barracks and saw patients at old Parkland Memorial Hospital on Maple Avenue.

"Southwestern was and is a very fine place to train," Radford said. Calling Seldin "a brilliant man," he recalled the time, as a medical student, when Seldin asked him a question during a conference. "I gave him what I thought was the correct answer, and he said, 'Radford where did you get that?' I told him I'd gotten the answer out of *Harrison's Principles of Internal Medicine*. He said, 'Oh, Radford, you got to get out of that and get into the literature.' My junior year he instituted the first written quiz for internal medicine, which was made up by all the sub-specialists of internal medicine. It was a booger bear, but we got through it."

The new Parkland hospital on Harry Hines Boulevard opened its doors in 1956 and became the medical school's primary teaching facility. Medical care was also provided at the Bradford Memorial Hospital, Richmond Freeman Memorial Clinic, and Children's Hospital of Texas.



Lee Radford

"SOUTHWESTERN
was and is a very fine
place to train."

1950s

Affiliation begins between UT Southwestern and the Veterans Administration Hospitals of Dallas.



Veteran's Administration Hospital of Dallas, 1955.

Additionally, an affiliation with the Dallas Veterans Administration hospitals was developed during the 1950s, providing important additional sites for medical education, research, and clinical care.

In 1954, the medical school's name was changed to The University of Texas Southwestern Medical School. The first

building on the new campus, Basic Science Hall, was dedicated in 1955. It was later renamed Edward H. Cary Basic Science Hall, and was followed by the Hoblitzelle Clinical Science Building. The deteriorating "shacks" were finally vacated in 1958.



1951

Charles Martin is elected president of the Dallas County Medical Society.

But while the medical school flourished, the radiology division experienced some growing pains. Since 1943, radiology had been a division of the Department of Surgery. At the medical school, under Charles Martin, the radiology faculty was made up of clinical radiologists from the Dallas-Fort Worth area. However, radiologists practicing at Parkland hospital were employees of the Department of Surgery.

After Jarrell Miller left in 1949, the surgery department hired Ralph Clayton, M.D., to become director of radiology at



Architect's rendering of Basic Science Hall.



The framework of the Hoblitzelle Building can be seen behind the Cary Building.

Parkland hospital and join the faculty at UT Southwestern. He was to work with John Wilson, M.D., also a faculty member. By several accounts, however, the two did not get along. Clayton ultimately fired Wilson, but Wilson refused to accept the decision.

Martin supported Clayton, which upset Wilson and his older brother, Ben Wilson, M.D., who happened to be chair of surgery at UT Southwestern. The brothers approached Lee Hudson, M.D., chief of surgery at Parkland and chair of the hospital's board.



Parkland Memorial Hospital in 1955, soon after opening.

In his essay for the book *Selected Recollections of The University of Texas Southwestern Medical School*, James Robinson, M.D., wrote, "Charles Martin supported Clayton, which produced a battle royal with legal action. The result was devastating to the school, for sides were taken by sundry and all. Wilson was defrocked and left for Johnstown, Pennsylvania. Clayton also left. Hudson, as a member of the Parkland Board, fired Martin."

As the situation escalated politically and legally, two deans of the medical school, George Aagaard, M.D., (dean from 1952 to 1954) and Atticus J. Gill, M.D., (dean in 1951, and again from 1954 to 1967), intervened. It was determined that a radiology department should be created. But because many of those embroiled in conflict had left the medical center, as well as nearly every resident, it was left to Miller, now at Baylor Medical Center in Dallas, and his colleagues to step in and temporarily handle care and teaching. The arrangement could not last.



Fred Florence and Atticus J. Gill at the Hoblitzelle Building dedication.

1954

First patients are moved from old Parkland hospital on Maple Avenue to the new facility on Harry Hines Boulevard.



1954

The medical school is renamed The University of Texas Southwestern Medical School.

1956

*Frederick Bonte
becomes the Department
of Radiology's first chair.*



Frederick Bonte

After conducting a nationwide search, Gill reached out to Frederick J. Bonte, M.D., to determine his interest in becoming chair of the radiology department. At the time of his recruitment, Bonte was chief of radiation therapy and nuclear medicine at Case Western Reserve University School of Medicine in Cleveland, Ohio.

"Don't look at the buildings," advised Jack Pritchard, M.D. "Talk to the people." Pritchard and Bonte had been classmates at Case Western, and because Pritchard was now UT Southwestern Medical School's chair of obstetrics and gynecology, he

was the first person Bonte called when approached about the position.

"August was when I had my interview," Bonte recalled. "I knew from my Army days that Texas could be hot, but I still came down wearing my only black suit, made of flannel, and, embarrassingly, nylon underwear. Unfortunately my host, Dr. Don Seldin, did not have air-conditioning in his car. It was joked that if I could visit every professor in the medical school, a whole lot of people in Dallas and Fort Worth, and survive it all in heated flannel and nylon, then I could stand anything."

On July 1, 1956, Bonte became the Department of Radiology's first chair.

During his inaugural year, he was often a one-man show. Bonte did all the diagnostic radiology and radiotherapy with the assistance of only one third-year resident. Martin assisted, having been reinstated as a clinical professor, as did other radiologists in the community.

"He was a tough old bird and we became very good friends," said Bonte of Martin. "When I moved to Texas, he invited me to visit his home. He had all his radium cases documented on colored slides, a whole wall. We'd go through them, case by case. He had more radium experience than anybody else in the world. And he was marvelous at explaining why he did what he did. He could show film of someone suffering from tumors on the tongue and neck and how they'd been treated to become a nice-looking individual singing tenor in the choir. He was a remarkable guy."



Jack Krohmer

In time, Bonte persuaded Jack Krohmer, a physicist in the Western Reserve University Atomic Energy Medical Research Project, to complete his doctorate at UT Southwestern and become a professor of radiology in physics.

Together, Krohmer and Bonte founded the nuclear medicine division within radiology and established one of the first laboratories for nuclear medicine in the southwest. Using parts ordered from catalogs, they built a radioisotope scanner, the first such device at the medical school.

Next came Jack Reynolds, M.D.

"JACK WAS a superb functioning radiologist who could also teach the specialty as nobody else could."

— Frederick Bonte



Jack Reynolds

1957

The radiology department establishes one of the first laboratories for nuclear medicine in the southwest.

1957

UT Southwestern Medical School receives cineangiocardigraph, the first X-ray machine in the U.S. capable of capturing simultaneous front and side views of a beating human heart.

"One day my secretary told me a young man from New York City had arrived looking for work," Bonte said. "In walks this bright looking kid who told me he'd been born in Houston, but had grown up in New Jersey after his parent relocated the family when he was six months old. He said he'd been too young to oppose the move, but he'd been trying to get back to Texas ever since. Hiring him was the smartest thing I did in my 17 years as department chair. Jack was a superb diagnostic radiologist who could also teach the specialty as nobody else could."

Reynolds became chief of diagnostic radiology. Together, he and Bonte revolutionized how radiology was taught throughout medical students' four years of classes. During their first year, students learned how to read normal X-ray films. Sophomores then viewed more exotic or abnormal images, learning to identify disease. Third-year students confronted "mystery cases," which also was an elective course for seniors. The senior elective became so popular students simply dubbed it "Jack Reynolds."

The same year Reynolds was hired, the medical school received a cineangiocardio-



Medical students study X-ray transparencies with an instructor in 1958.

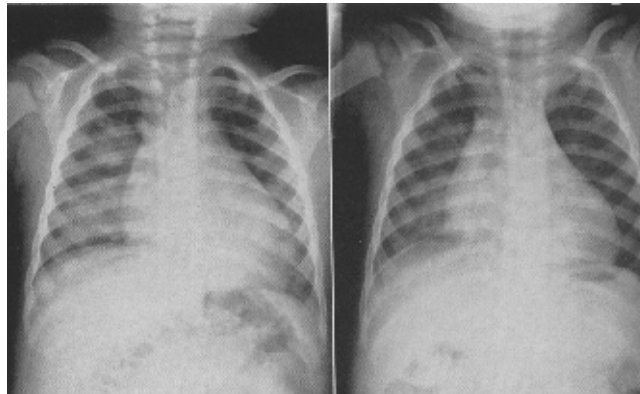
graph — the first X-ray machine in the U.S. capable of capturing simultaneous front and side views of a beating human heart. The device captured images from two fluoroscopic screens at the rate of 60 frames per second. Although it was located on Parkland hospital's ground floor, the machine belonged to the medical school.

"When I was considering the job at Southwestern, the cardiologist Carleton Chapman called to say he was working on getting a cineangiocardigraph. He needed a place to house it and we made a deal he could use space in Radiology if we got 50 percent interest in using the machine," Bonte said.

Bonte and Reynolds, along with Carleton Chapman, M.D., and Orland Baker, M.D., used a biplane cinefluorography technique to discover a method for measuring the heart's ventricular volume. It permitted construction of volume curves and estimation of stroke volume of the left ventricle for several successive contractions in both animals and humans.

The cineangiocardigraph also demonstrated the threat of hydrocarbon pneumonitis. Households unable to afford electricity often relied on kerosene as a source of light and heat. Unfortunately, drinking or breathing the substance was poisoning young children. Using the cineangiocardigraph, Bonte and Reynolds took images of canines that had kerosene injected

into their bronchial tubes. Their results, when compared to X-rays of children who'd been brought in due to suspected poisoning, confirmed kerosene as the culprit.



Hydrocarbon Pneumonitis, or "Kerosene Lung"



1961

Cobalt 60, a synthetic radioactive isotope given to UT Southwestern by Sun Oil Company's production and research laboratory, is delivered in a two-ton lead receptacle.

"IT ENCOURAGED philanthropists to get involved and provide electricity to those in poverty, thus eliminating the kerosene threat."

— Frederick Bonte



Viewed from Inwood Road, St. Paul Hospital's exterior nears completion.



A patient is transported out of the old St. Paul building for transfer to the new hospital building on Harry Hines Boulevard

Additionally, with the help of Frank Harrison, M.D., associate dean of the graduate school, a graduate program in radiation biology was founded, with Krohmer as its director. At the time, it was the only such program in the Southwest, and it launched the department's reputation as a first-class academic unit.

"It encouraged philanthropists to get involved and provide electricity to those in poverty, thus eliminating the kerosene threat," Bonte recalled.

In 1958, the Southwestern Medical Foundation began a building campaign for St. Paul Hospital. Groundbreaking took place in 1959, with the first patients being admitted on December 22, 1963. The following year, the medical school had 100 full-time faculty members, 400 students, and more than 100 clinical residents.

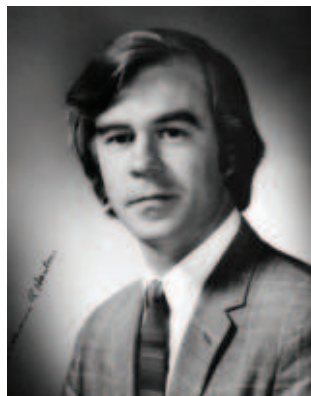


Sister Elizabeth Steiner, chief administrator of St. Paul Hospital, stands with blueprints in hand under the front entrance canopy of the unfinished hospital in 1963

Among the distinguished students who graduated from the department during the 1960s was William Hendee, Ph.D. He had gone to Tulane University in New Orleans on a football scholarship, but his real passion was physics. After his coach wouldn't allow him to play football and take required physics courses, Hendee left Tulane to attend Millsaps College. From there he went to Vanderbilt University in Nashville, Tennessee, for an atomic energy commission fellowship. Shortly afterwards, he and his wife were expecting a child.

"I was making \$2,500 a year on my fellowship," Hendee said. "Not enough to support a wife and a child, and she would not be able to continue work as an elementary school teacher because back then women could not teach in public schools once they began to show they were pregnant. Serendipitously, as part of my fellowship, I attended a meeting of the Health Physics Society in Boston. It was there I came across an advertisement for a fellowship in medical physics that paid \$6,000 a year. Back in those times, that was an amazingly generous fellowship."

Unbeknownst to Hendee, Krohmer was behind the notice. Thanks to generous support from the Gilbert X-Ray Co., and its representative, Robert Sanford, Krohmer had been able to post the lucrative offer for the radiology department's first graduate student.



William Hendee

"GOING TO DALLAS

was a wonderful experience.

At that time I was the only graduate student, which was a privilege. I got to work closely in the laboratory with Jack [Krohmer] and Fred Bonte.

"Going to Dallas was a wonderful experience," Hendee said. "At that time I was the only graduate student, which was a privilege. I got to work closely in the laboratory with Jack [Krohmer] and Fred Bonte.

"JACK WAS A GREAT TEACHER and I learned so much about teaching from him.

— William Hendee

"They were instrumental in my career," Hendee said. "Especially Jack, who became a lifelong mentor and friend.

"Jack was a great teacher and I learned so much about teaching from him," Hendee continued. "He could really teach a class of students, have them interested, and get them involved with asking questions. And it wasn't just lecturing; I learned things from him that have served me well my entire career. He was one of the great presences in my life."

Hendee graduated in 1962, receiving a doctorate in medical physics, and went on to enjoy an illustrious career, which included becoming professor and chair of radiology at the University of Colorado. At the time, Hendee was the only physicist known to have chaired a radiology department in North America.

The same year Hendee graduated from the medical school, Bonte was awarded a general research support grant from the National Institutes of Health (NIH). Throughout the decade, he began winning grant support from not only from the NIH, but also from private granting agencies. Bonte recalled one of the first NIH training grants given in radiology was awarded to the department in recognition of its productive research environment. It was around this time the nuclear medicine division pioneered placing nuclear test data on magnetic tape, and took a role in developing a series of widely copied nuclear medical tests for detecting heart disease.

On November 22, 1963, Bonte was in the midst of a radium case in an operating room at Parkland hospital when a technician entered and told him President John F. Kennedy had been shot.

"I told him that wasn't very funny, because I knew he was downtown,"

Bonte remembered. "The technician said, 'No they shot him.' And sure enough you could start hearing the sirens. Then the technician told me they were bringing him to Parkland. By the time I finished my case and took the elevator down to the emergency room, the Secret Service and FBI had sealed off the entire facility. Thereafter, the only people from radiology allowed to go back to the hospital's core were myself and the mobile X-ray technician who took films in all the operating rooms."

At 1 p.m. that day, Kennedy was declared dead.



President John F. Kennedy's motorcade in Dallas, November 22, 1963.

NOVEMBER 22, 1963

President John F. Kennedy and Texas Governor John Connally are shot and brought to Parkland Memorial Hospital. President Kennedy is declared dead at 1 p.m.



President John F. Kennedy died in Parkland hospital's Trauma Room 1.

"BY THE TIME I FINISHED MY CASE

and took the elevator down to the emergency room, the Secret Service and FBI had sealed off the entire facility.

Thereafter, the only people from radiology allowed to go back to the hospital's core were myself and the mobile X-ray technician who took films in all the operating rooms."

— Frederick Bonte



John Connally and his wife, Nellie, at Parkland hospital after the Texas governor was shot.

After the president's body had been transported to Air Force One, Bonte was asked to go to the recovery suite where Texas Governor John Connally was recuperating after having been shot in the same motorcade.

"They wanted a chest X-ray, so the technician and I were allowed to touch the governor," Bonte said. "We were supervised by two Texas Rangers. The law required they be in constant attendance with one of them on his feet at all times. They kept a sharp eye on

us while we got film of the governor. The technician and I were asked to come back daily to take X-rays for as long as the governor remained at Parkland."

"THEY WANTED A CHEST X-RAY, so the technician and I were allowed to touch the governor. We were supervised by two Texas Rangers. The law required they be in constant attendance with one of them on their feet at all times."

— Frederick Bonte

The department's ties to that fateful day did not end with Connally's return to Austin. On November 24, Lee Harvey Oswald, who had been charged with Kennedy's murder, was rushed to Parkland's emergency room after being fatally shot by Dallas nightclub owner Jack Ruby in the basement of police headquarters as he was being transferred to the more secure Dallas County jail. Throughout Ruby's imprisonment for first-degree murder, he received medical treatment at Parkland, and it was there that he received his cancer diagnosis.



Floral bouquet on the door of Parkland hospital's Trauma Room 1.

"THE FILMS ON RUBY were all read by Jack Reynolds."

— Frederick Bonte



Jack Ruby's mugshot and fingerprints.

Images courtesy of University of Texas Libraries

"The films on Ruby were all read by Jack Reynolds," Bonte said. "I had one encounter with him. I was walking down the hall and there's a fellow lying on the cart, obviously Jack Ruby, waiting for an X-ray exam. And he has by his pillow this little portable radio, which he's listening to. It's turned on very loud. I went over to say, 'Hello, how are you doing?' and he said, 'Hey doc, you know, that's me they're talking about.' That was our exchange."



JOHN CONNALLY
GOVERNOR OF TEXAS

January 8, 1964

Dear Mrs. Baker:

When a person literally owes his life to a doctor or a team of doctors, it would seemingly be easy to express his thanks. This must not be the case, however, for it is extremely difficult for me to express in words my appreciation to the medical profession for the treatment I have received at Parkland and since my return to Austin.

The severity of my wounds probably would have resulted in death had there been any delay in medical treatment. Fortunately, a hospital such as Parkland Memorial was available, staffed with personnel trained to react swiftly to any circumstances. I was saved because men and women of great skill and experience were on hand to perform their duty.

Medicine is a profession with lofty traditions. As long as there are doctors like those with whom I have been associated during these weeks of treatment and recovery, there is no doubt in my mind that American medicine will continue its great advances in service to the people.

Sincerely,

A handwritten signature in dark ink, reading "John Connally". The signature is fluid and cursive, with a large, sweeping "J" and "C".

John Connally

Mrs. Marilyn Baker, Managing Editor
Texas State Journal of Medicine
1801 North Lamar Boulevard

John Connally expressed his gratitude for the outstanding medical care he received during his stay at Parkland in a letter to the Texas State Journal of Medicine.

"THE DEPARTMENT began to attain its present-day solidity in both teaching and patient care with the rapid development of young faculty finding in our own resident staff such present-day leaders as Tom and George Curry, Bill Kilman, and GERALD Dietz."

— Frederick Bonte

Also in 1963, Krohmer was recruited to the Roswell Park Memorial Institute in Buffalo, New York. Bonte hired several faculty members, including Alvin Greenberg, M.D., and Edward Christensen, M.D.

"The Parkland residency program really got its start in 1957, and in succeeding years the resident staff grew, first to a total of six, then to 12, and finally to the ultimate size it was to attain during my tenure as chairman, 18," wrote Bonte in a personal letter dated June 10, 1982. "Dr. Reynolds and I were fortunate enough to add Dr. Edward Christensen to the staff and within months after his arrival he became the chief of the residency program. The department began to attain its present-day solidity in both teaching and patient care with the rapid development of young faculty finding in our own resident staff such present-day leaders as Tom and George Curry, Bill Kilman, GERALD Dietz."



1965

Jack Reynolds publishes *The Roentgenological Features of Sickle Cell Disease and Related Hemoglobinopathies*.



Edward Christensen



Tom Curry



Robert Parkey

1965

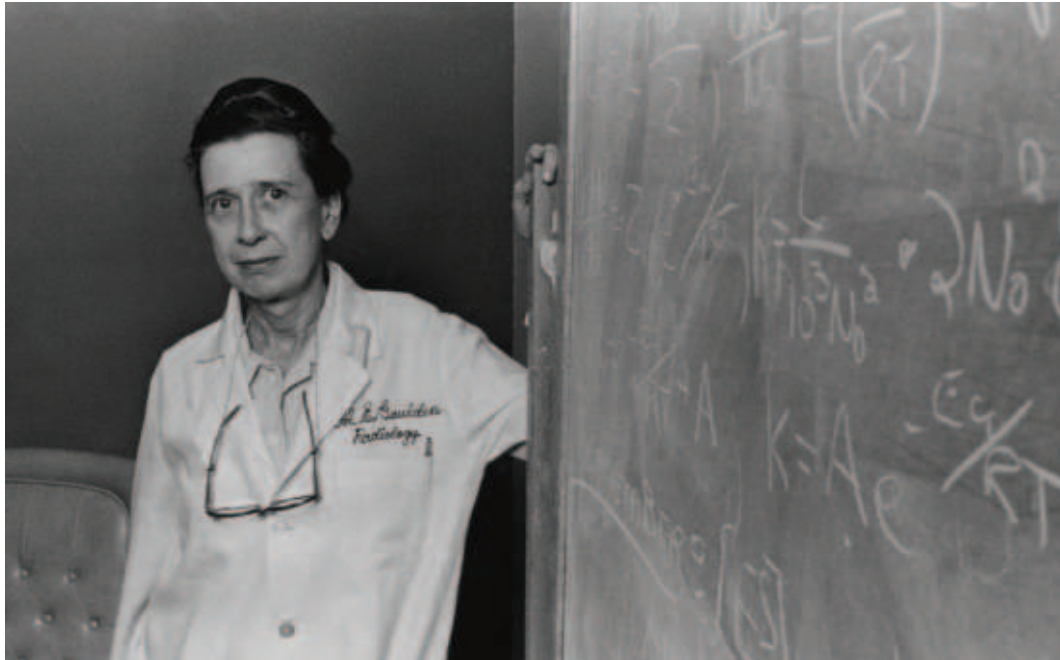
Future radiology
department chair
Robert Parkey
graduates from
UT Southwestern
Medical School.

In 1965, Reynolds published *The Roentgenological Features of Sickle Cell Disease and Related Hemoglobinopathies*, a landmark textbook that focused on how X-ray films reveal the effects of sickle cell disease.

That same year, Bonte hired Mary Esther Gaulden, Ph.D., who led the radiation biology graduate program. Gaulden's research focused on the effects of low-dose radiation, using grasshoppers as her experiment model. She went on to serve for 10 years as a member of the National Research Council Committee on Toxicology, which studied the effects of deep space radiation on astronauts.



Robert Parkey (back row, second from right)



Mary Esther Gaulden

"I have always been interested in science and scientific research," Gaulden recalled in a 1975 interview published in *The Dallas Morning News*. "I had an undergraduate professor — a woman — who took each student and pushed our good points. She told me, 'You can do it, if you want to.'"

Gaulden earned a doctorate in biology from the University of Virginia, where she remembered having a male professor who had two daughters.



1966

Mary Esther Gaulden helps organize the National Organization for Women (NOW)



"SHE WAS A LOVELY PERSON and the first real feminist I ever knew. She was a role model for women who pursued careers in science and medicine."

— Mary Ann Mullican,
UT Southwestern's first woman radiology resident

1966

The medical school is renamed the University of Texas Southwestern Medical School at Dallas.

"He was all for pushing women," she said.

In 1966, she helped found the National Organization for Women.

"She was a lovely person and the first real feminist I ever knew," said Mary Ann Mullican, M.D., an associate assistant professor of radiology, who started her residency at Parkland in 1967. "She was a role model for women who pursued careers in science and medicine. I do remember one story where she became quite irate because Neiman Marcus would not give her a charge card in her own name. They insisted the card be in her husband's name."

In May 1966, the Board of Regents elected to change the medical school's name to the University of Texas Southwestern Medical School at Dallas.



On July 1, Bonte celebrated his first 10 years as chair of the department. One year later, Charles Sprague, M.D., became dean of the medical school.

Five years after that, upon the school's reorganization as a comprehensive academic medical center with three distinct schools (medical, graduate biomedical sciences and allied health sciences), Sprague became the institution's first president. Unbeknownst to Bonte, this reorganization would angle his career in a direction he never

1967

Charles Sprague becomes dean of the medical school.

envisioned. He would also become involved in one of the medical center's most significant discoveries during the 1970s.



A close-up view of the glass discs from a McIntosh Static Machine. This electrostatic induction machine, when combined with an X-ray tube, was used to produce X-rays for radiographic and fluoroscopic procedures from 1896 through the early 20th century.

THE UNIVERSITY
OF TEXAS
SOUTHWESTERN
MEDICAL SCHOOL

GAINING MOMENTUM, *achieving*

RENOWN

Standing in front of the Cary Building in 1968 are, from left, Associate Dean for Business Affairs Julius Weeks, Joe M. Dealey, and UT Southwestern Medical School Dean Charles Sprague.

CHAPTER THREE

WHEN CHARLES SPRAGUE ARRIVED at UT Southwestern, the institution consisted of three small academic buildings attached to Parkland Memorial Hospital. He initiated a \$40 million building expansion, unprecedented in Texas; doubled the medical school's enrollment within 10 years; and expanded allied health and research training programs. Under his leadership, UT Southwestern was transformed into a vibrant, comprehensive medical and life sciences center.

In the early 1960s, Children's Medical Center became the primary pediatric teaching facility for UT Southwestern Medical School. Guido Currarino, M.D., was named its chief radiologist in 1965. Over the course of his career, he published 122 articles, was a longtime member of the John Caffey Society, and contributed to Caffey's Pediatric Diagnostic Imaging. Currarino was particularly interested in congenital abnormalities, two of which bear his name: the Currarino syndrome, and the Currarino-Silverman syndrome.



Guido Currarino



1967

Mary Ann Mullican becomes the first woman radiology resident at UT Southwestern.

THE OVERWHELMING RESPONSE after each talk or paper ended was, 'Why didn't I think of that?' He surely has one of the best eyes in pediatric radiology."

— Walter E. Berdon, from *Pediatric Radiology*

"Guido Currarino was an incredibly talented pediatric radiologist who was renowned locally and nationally for his description of many radiologic syndromes and for his unique personality," said Charles Ginsburg, M.D., senior associate dean for academic administration at UT Southwestern Medical School and professor of pediatrics. "He was a fascinating character — a charming, puckish curmudgeon who was one of the famous early second-generation pediatric radiologists but, what few people knew, he was also fully trained as a pediatrician before he obtained radiology training in Boston and Cincinnati."

Currarino was a charter member of The Society for Pediatric Radiology (SPR). In 1995, in recognition of his many contributions, the SPR presented him its Gold Medal, the organization's most distinguished honor.



Tom Curry



William Kilman

Writing in *Pediatric Radiology* at the time, Walter E. Berdon, M.D., described how other pediatric radiologists eagerly awaited Currarino's scientific presentations, saying his research was "usually of an entity we all knew nothing of and had missed on films; as an example, The Ductus Calcification was of 'only' 75 cases gleaned over two years of looking with two proved pathologically...The overwhelming response after each talk or paper ended was, 'Why didn't I think of that?' He surely has one of the best eyes in pediatric radiology."

Throughout the 1960s the radiology department's residency program continued to gain momentum. Reflecting on the period, Frederick Bonte recalled when Tom Curry, M.D., and William Kilman, M.D., took their board certification exams.

“BACK THEN YOU COULD FIND OUT where residents trained. That did wonders for the reputation of the department because examiners from all over the country were listening to this story about these cowboys from Southwestern acing their board exams. Our applicant pool really began to grow and we were able to add more first-rate faculty.”

— Frederick Bonte

“Kilman and Curry were candidates for certification by the American Board of Radiology at the same time,” Bonte said. “I was one of the examiners, and it was customary for all of us to get together at the end of the day and swap stories about what went on. This particular day, Kilman and Curry had gone back to back. The old gentleman who operated their station came up to me and said, ‘Where in the hell did you get these people? Kilman sits down, I showed him a film and he immediately shoots it down with a thick Texan accent. I couldn’t show him anything he couldn’t get. It was wonderful. What’s worse is the next man who came through was just as good and was from the same program.’”

“Back then you could find out where residents trained,” Bonte continued. “That did wonders for the reputation of the department because examiners from all over the country were listening to this story about these cowboys from Southwestern acing their board exams. Our applicant pool really began to grow and we were able to add more first-rate faculty.”

Both Kilman and Curry joined the faculty. Several years later, George Curry, M.D., Tom Curry’s younger brother, also graduated from UT Southwestern, completed his residency, and joined the faculty.



OCTOBER 1971

Frederick Bonte becomes a
founding member of
the American Board of
Nuclear Medicine.

In 1967, Mary Ann Mullican became the first female resident of the program. Her fascination with X-rays began as a child, when she and her brother would go to a department store in the northeast Texas town of Henderson to have images made of their feet to determine proper fits. The first image she saw as a resident at Parkland made quite an impression.

"They put a stack of films in front of me and on top was an X-ray of a skull with an axe in it," Mullican said. "The patient was talking and doing very well, so to speak. He'd had a fight with someone. A problem arose when they needed to take him to surgery because of how the axe handle was positioned and [the maintenance department] had to get involved. Back then the anesthesia equipment wasn't very flexible. Needless to say the case grabbed my attention."



"THEY PUT A STACK
OF FILMS in front of me and
on top was an X-ray of a skull
with an axe in it...
Needless to say, the case
grabbed my attention."

— Mary Ann Mullican

It was during this time that
Mullican and her classmates
became "guinea pigs" for a text-
book that would revolutionize the
way physics was taught in diag-
nostic radiology. Ed Christensen
had reorganized the radiology
residency-training program and was

now lead author of the textbook, *Christensen's Introduction to the Physics of Diagnostic Radiology*, published in 1972. Four editions would eventually be published, and for several decades it was the reference standard and mandatory reading for all radiologists taking board examinations.

In the preface to the book's third edition, authors Tom Curry, James Dowdey, Ph.D., and Robert Murry Jr., Ph.D., described Christensen's inspiration.

"He soon recognized that residents' frantic efforts at studying radiological physics were producing little more than frantic residents," they wrote. "Thus began a modest series of informal conferences dealing with physics. Soon handouts began to appear, and by 1968 an in-service quiz tested both the teacher and his students. Ed was, but should not have been, surprised to find that this written material he had so painfully produced was finding its way about the country as friend traded with friend. In this manner was born the framework for the first edition of *Christensen's Introduction to the Physics of Diagnostic Radiology*. This text was the direct result of a teacher's effort to teach where he was most needed."

In June 1971, the National Research Council named George Curry and Robert Parkey, M.D., Picker Scholars. Curry was investigating the splanchnic circulation after interruption of the superior mesenteric artery, while Parkey focused on small computer processing of scintigram data. Parkey had joined the radiology faculty in 1970 after completing a fellowship in computer applications in radiologic data processing at the University of Missouri in Columbia, Missouri. A graduate of UT Southwestern Medical School, Parkey completed his residency in diagnostic radiology at Parkland hospital.



Robert Murray Jr.



1972

Christensen's Introduction to the Physics of Diagnostic Radiology is published.

1972

The Radiology Imaging
Center is established.

The division of nuclear energy was also mushrooming. In an interview with radiology professor Dana Mathews, Ph.D., M.D., for the Southwestern Chapter of the Society of Nuclear Medicine, Bonte shared memories of the time.

"The nuclear medicine laboratory in Parkland hospital was quite busy," said Bonte, who was ninth chapter president from 1964 to 1965. "We would frequently have 30 patients a day. We not only did the work for Parkland, but we did it for Children's



Ernest Stokely

Medical Center and some of the patients from St. Paul. And patients would be referred in from the community because there wasn't wide access to nuclear medicine in the community hospitals at that time."

In 1971, Bonte was one of 10 founding members of the American Board of Nuclear Medicine. The board was the nation's first "conjoint" board, an interdisciplinary entity that brought together physicians from existing medical specialties — in this case internal medicine, pathology and radiology. At the time, Texas' only approved post-graduate and residency-training program in nuclear medicine were in

"NUCLEAR MEDICINE saw the first applications of computers in medical imaging long before CT scanners or MRI appeared."

— Ernest Stokely

Dallas — a cooperative effort involving UT Southwestern, as well as Parkland, St. Paul and Veterans Administration hospitals.

The following year, Ernest Stokely, Ph.D., joined the radiology department faculty and helped establish the Radiology Imaging Center, which was one of the earliest mini-computer-based medical imaging research groups.

"Our group was primarily involved in software development for interfacing and imaging applications of minicomputers in nuclear medicine," Stokely said. "Nuclear medicine saw the first applications of computers in medical imaging long before CT scanners or MRI appeared. Our imaging lab developed software using bit level, assembly level, and higher-level language coding. We wrote software for drivers for new equipment, and we wrote our own graphics software packages when none were available."

Several years later UT Southwestern and the University of Texas at Arlington launched the first joint graduate degree biomedical engineering program in the state. Stokely served as co-chairman of the program from 1974 to 1984.

In November 1972, the name and scope of the medical school was changed with its reorganization into The University of Texas Health Science Center at Dallas. In approving the concept of a health science center, the UT System Board of Regents provided for the continued growth of coordinated but separate medical, graduate, and undergraduate components, interacting creatively on the problems of human health and well-being.

"I AM PLEASED that Dr. Bonte is enthusiastic about serving our institution in this important new capacity. He will provide strong leadership in a climactic period of development, as the medical school grows towards its goal of doubling in size by 1978."

— Charles Sprague, 1973



NOVEMBER 1972

The medical school is reorganized as The University of Texas Health Science Center at Dallas.



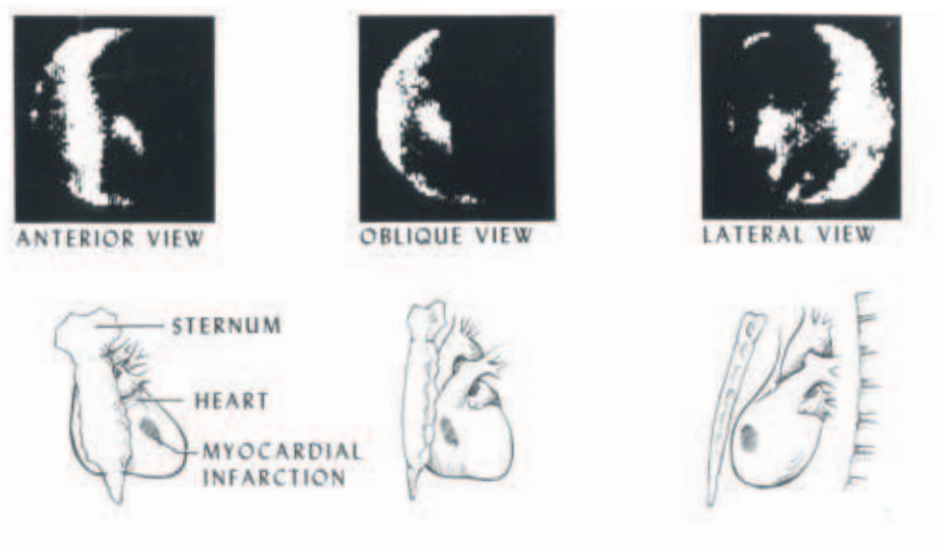
Frederick Bonte

APRIL 1973

Frederick Bonte becomes dean of Southwestern Medical School. Edward Christensen becomes acting chair of the radiology department.

JANUARY 1974

Frederick Bonte
and associates
discover technetium
phosphate labeling of
myocardial infarcts.



With Sprague as president, a faculty search committee was formed to find a new dean of the medical school. Bonte was chosen unanimously for the role, and he accepted. On March 16, 1973, a press release made the announcement official.

"Under Dr. Bonte's leadership, Southwestern's Radiology Department has achieved a national reputation for its pioneering contributions to the relatively new science of nuclear medicine," the release quoted Sprague. "I am pleased that Dr. Bonte is enthusiastic about serving our institution in this important new capacity. He will provide strong leadership in a climactic period of development, as the medical school grows towards its goal of doubling in size by 1978."

Bonte retained his faculty appointment in the radiology department and continued to participate in nuclear medicine research. Christensen assumed the position of acting chair of the department, a position he held until 1974.

That same year, Bonte and his colleagues made a significant discovery. For the first time, thanks to a new nuclear scanning technique, physicians could see the exact area of damage caused by a heart attack.

Technetium 99m pyrophosphate, a radioactive substance with an affinity for calcium, was shown to accumulate in necrotic and severely injured heart muscle after it was injected into patients. Within an hour after injection, damaged areas of the heart with sufficient calcium accumulation would bind to the radiopharmaceutical and show up as a bright spot on the screen of a scanner, or scintillation camera. The image could be enhanced by computer processing and could be stored on videotape for later replay.

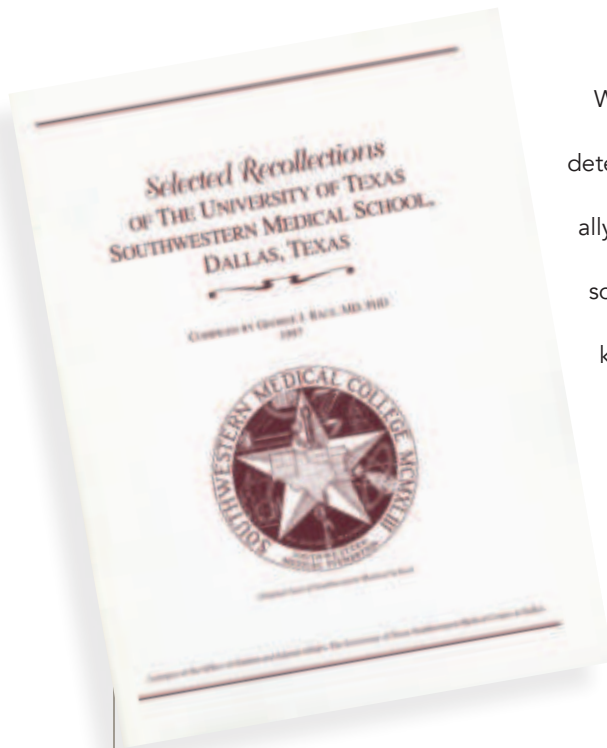
This discovery was somewhat serendipitous and prompted by Bonte's position. "I was dean of the medical school and the president came to me with a dilemma," Bonte recalled. "He told me he'd scrounged together enough money to buy one electron microscope, but two departments wanted it. So I had the pathology chairman and cell biology chairman come to my office to make presentations about why their department should get the microscope. It came up that, as a cell dies, hydroxyapatite [a bone-like substance] appeared in the mitochondria. It struck me you could tag calcium with radioactivity. I told these two chairmen we had money for one microscope, but what if it was divided it into two, giving each half. They leaped up, said that was a great idea and vanished out the door. I immediately called Parkey."

Bonte asked Parkey to set up an animal experiment in which a heart attack was induced, followed by an injection of Technetium 99m Stannous Pyrophosphate, a well-known radioactive substance used in bone scanning. When Parkey pointed a scintillation camera at the animal, "the thing lit up," Bonte said.

This new technique was a clever adaptation of some very well known practices used in nuclear medicine to diagnose thyroid and bone tumors. It was, in fact, practically identical to a method used in bone scanning, and knowledge of this method provided Bonte the key to the new technique.

SPRING 1974

The University of Texas Health Science Center at Dallas and The University of Texas at Arlington launch the first joint graduate degree biomedical engineering program.



With this new tool of diagnosis, doctors could determine, usually within an hour, if a person was actually suffering a heart attack or simply pain from other sources. Additionally, where the scan shows an infarct, knowledge of its size and position enabled faster, more effective treatment.

"It was a major breakthrough for Southwestern," said Kern Wildenthal, M.D., Ph. D., then dean of the graduate school and future president of the medical center.

Following the discovery, a new portable scanning camera and computer was assembled for Parkland.

The Southwestern Medical Foundation donated more than \$100,000 for this equipment.

"IT WAS A MAJOR breakthrough for Southwestern."

— Kern Wildenthal
Graduate School Dean, 1974

"The nuclear medicine group began to apply its improving instrumentation to the study of cardiovascular system, which led to an important collaboration with the Cardiology section of internal medicine, headed by James T. Willerson, M.D., and with the department of pathology and L. Maximilian Buja, M.D.," Bonte wrote in an essay for *Selected Recollections of The University of Texas Southwestern Medical School*. "A good deal of what has come to be known as nuclear cardiology resulted from this collaboration and from the efforts of numerous residents, fellows, and graduate students who trained at Southwestern in the early 1970s."

“A GOOD DEAL of what has come to be known as nuclear cardiology resulted from this collaboration and from the efforts of numerous residents, fellows, and graduate students who trained at Southwestern in the early 1970s.”

— Frederick Bonte

In August 1974, Robert Berk, M.D., became the second chair of the Department of Radiology at The University of Texas Health Science Center at Dallas. A native of Pittsburgh, he graduated from the University of Pennsylvania and its medical school. Berk completed his internship at St. John's Hospital and served as chief of radiology at Castle Air Force Base in Merced, California. He later served received his radiology residency training at Peter Bent Brigham Hospital in Boston.

Berk's academic career began as a teaching fellow at Harvard Medical School in 1961. In 1962, he joined the University of Pittsburgh's School of Medicine as an instructor in radiology. He became an assistant professor the following year and later joined the medical school faculty at the University of California–San Diego. There, Berk was associate professor and chief of gastrointestinal radiology before being recruited by UT Southwestern.

The early 1970s were proving to be an exciting time for the radiology department. And things were just getting started.



Robert Berk

AUGUST 1974

Robert Berk becomes the Department of Radiology's second chair.



PROFILES *in* LEADERSHIP

Dr. Frederick J. Bonte
Professor of Radiology
The University of Texas
Southwestern Medical Center
5323 Harry Hines Boulevard
Dallas, Texas 75235-9061

Dear Fred,

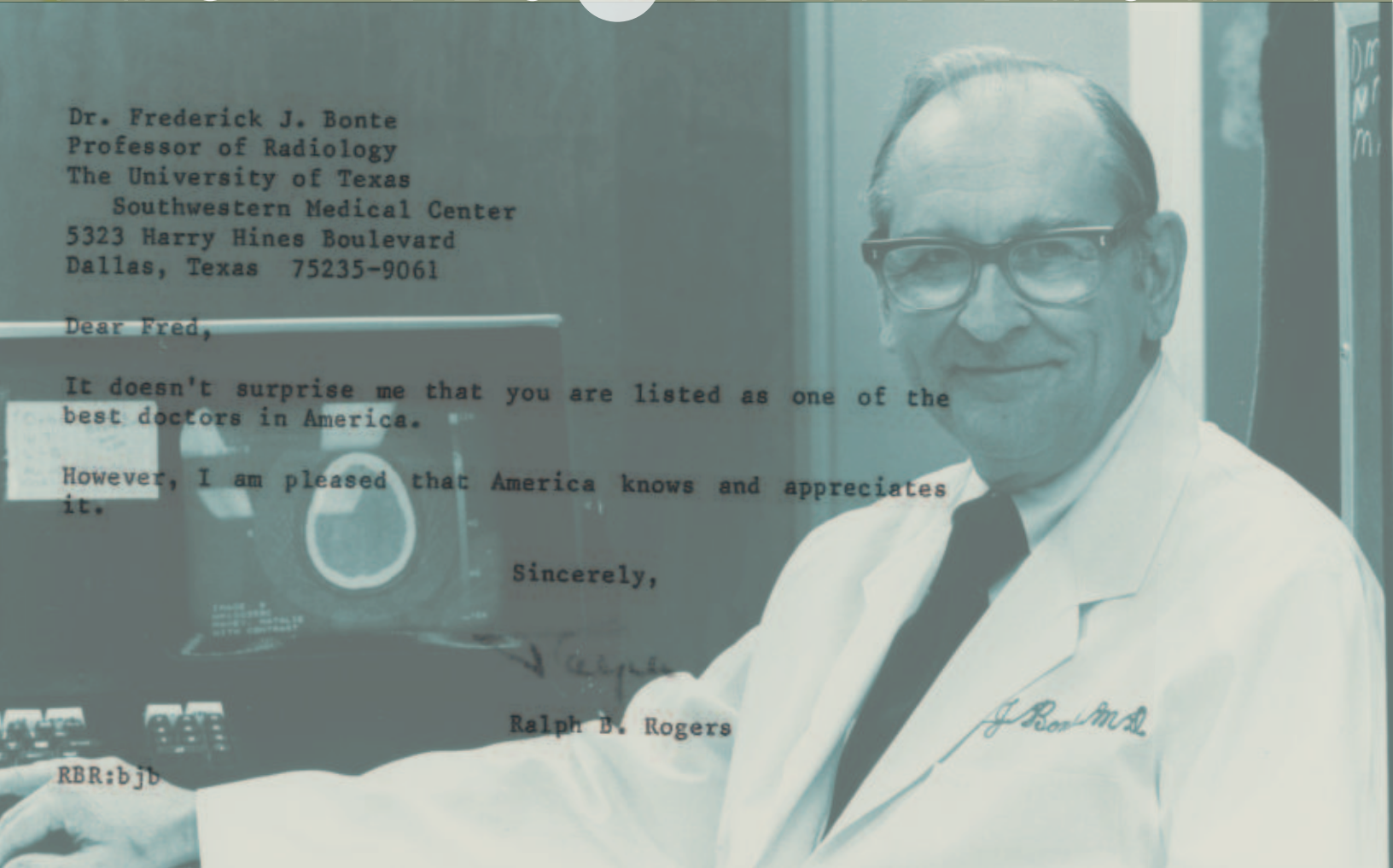
It doesn't surprise me that you are listed as one of the best doctors in America.

However, I am pleased that America knows and appreciates it.

Sincerely,

Ralph B. Rogers

RBR:bjb



FREDERICK BONTE, M.D.

YOUNG FREDERICK BONTE spent his early years in Reading, Pennsylvania, yet he moved often with his family because his father, a metallurgical engineer, was assigned to various steel plants during the Great Depression. Bonte graduated from high school in Canton, Ohio, and attended the University of Southern California before receiving a bachelor's of science degree, in 1942, from Western Reserve in Cleveland.

He did not intend to become a radiologist. After enlisting in the Army during World War II and graduating from Western's Reserve School of Medicine in 1945, he received his commission as a first lieutenant. Following a civilian internship, he went to Percy Jones Hospital in Battle Creek, Michigan.

"My first day I reported in uniform, as required, and was invited to the executive office of the hospital," Bonte recalled.

"A colonel confirmed my name was Bonte and matched the paperwork on his desk. He then said, 'You are assigned to the department of radiology.' We shook hands and I never had the opportunity to speak with him again."

Bonte spent the next three months learning about diagnostic radiology and radiation therapy. He then attended the Army School of Roentgenology at Fort Sam Houston in San Antonio. Bonte's next assignment took him to the U.S. Army Air Corps and Colorado's Lowry Air Force Base, where he served as a captain and chief of X-ray service. It was there, after a one-day course on the new and mostly unknown field of nuclear medicine, that his legendary career took flight.



Frederick Bonte in his Army uniform, 1945.

Returning to Western in 1948, Bonte received fellowship training in nuclear medicine in the U.S. Atomic Energy Commission's Atomic Energy Research Project. The project director, former Manhattan Project scientist Hymer L. Friedell, M.D., Ph.D., is widely credited with being a pioneer in the field of nuclear medicine.

Bonte began a radiology residency program at the school and, afterwards, became a faculty member. He was chief of radiation therapy and nuclear medicine at Western Reserve when Atticus J. Gill, M.D., then dean of The University of Texas Southwestern Medical School, invited him to become chair of its radiology department.

"I WAS CONVINCED THAT UT SOUTHWESTERN was the place for me.

At the time I was a one-man show, but the radiology community rallied around and with good luck I was able to find some extraordinary individuals to help me build the department."

— Frederick Bonte

Bonte accepted Gill's offer in 1956. He also became director of radiology at Parkland Memorial Hospital and chief of radiology service at Children's Medical Center, the Veterans Administration Hospital of Dallas, and Presbyterian Hospital of Dallas — appointments he held until 1973, at which time he was elected dean of the medical school by his fellow department chairs.

"I was convinced that UT Southwestern was the place for me," Bonte said. "At the time I was a one-man show, but the radiology community rallied around and with good luck I was able to find some extraordinary individuals to help me build the department."



During his 17-year tenure as chair, the Department of Radiology grew from one to 23 faculty members. Graduate degree-conferring programs in radiological physics and radiation biology were established, as was one of the nation's first academic nuclear medicine laboratories. It pioneered the method of placing nuclear test data on magnetic tape and took a leading role in developing a series of widely copied nuclear medical tests for detecting heart disease.

Additionally, Bonte and his associates received national attention for their innovations in linking computers with isotope scanning to measure blood flow. In 1971, he helped establish the American Board of Nuclear Medicine, serving as the organization's chair and president from 1977 to 1980.

After 1973, Bonte retained his faculty appointment in the Department of Radiology and continued participating in nuclear medicine research. He discovered a nuclear scanning technique that allowed the viewing and imaging of a heart attack. This method of putting heart attacks "on camera" played an important role in the growing field of nuclear medicine.

As dean, Bonte was active in national health policy issues involving changes in healthcare services, reimbursements for teaching hospitals, and improving medical care at UT Southwestern's teaching hospitals. One colleague described him as displaying "the wisdom of Solomon" during his tenure. Bonte was honored when a library at Parkland Memorial Hospital on Harry Hines Boulevard was named for him.

However, he missed working in the clinical and laboratory settings. In 1980, Bonte relinquished his post as dean to become director of the newly created Nuclear Medicine Center at UT Southwestern. He and his associates began using a single-photon emission computer-assisted tomographic scanner (SPECT), to "see" whether a patient had suffered a stroke by analyzing brain blood flow.

In 2004, this same technique showed SPECT could identify a characteristic sign of Alzheimer's disease and distinguish it from a group of illnesses known as frontotemporal diseases, which make up the second-leading cause of dementia in the elderly.

Bonte officially retired from UT Southwestern in 2012. Throughout his career he authored numerous publications and was a member of many national committees and organizations.

"I AM MOST PROUD OF OUR SUCCESS in attracting some of the most talented and remarkable residents, graduate students and faculty throughout the years."

— Frederick Bonte

He served as president of the Southwestern Chapter of the Society of Nuclear Medicine from 1964 to 1965 and as president of the Texas Radiological Society from 1974 to 1975. In 1986, Bonte was honored with the organization's highest honor, the Gold Medal. He also served as president of the Dallas County Medical Society in 1980

and received its Max Cole Leadership award in 1993. Several years later Bonte was awarded the American College of Nuclear Physicians highest honor, The President's Award. He served 23 years in the Texas Medical Association House of Delegates and represented the Society of Nuclear Medicine as its American Medical Association delegate for many years.

From 1990 to 1994, he held the *Effie and Wofford Cain Distinguished Chair in Diagnostic Imaging* and, from 1994 to 2012, the *Dr. Jack Krohmer Professorship in Radiation Physics*. Robert and Lola Sanford, who were major contributors to the Department of Radiology, created the *Dr. Fred Bonte Professorship in Radiology* in his honor.

Of all his accomplishments, Bonte says his greatest were the people he surrounded himself with during his time at UT Southwestern.

"I am most proud of our success in attracting some of the most talented and remarkable residents, graduate students and faculty throughout the years," he said.

At the time of the Department of Radiology's 60th anniversary, Bonte celebrated his 56-year association with the department along with his wife, Cecile, their six children and numerous grandchildren.





INNOVATIONS *and*

Hospital EXPANSION

Highlights

Dallas
County
Hospital
District

Volume XIV, No. 8

Parkland Memorial Hospital

September, 1977

Dr. Robert Parkey named new chairman of Radiology

Dr. Robert W. Parkey has been named chairman of the Department of Radiology at Parkland Memorial Hospital.

Dr. Parkey, an internationally recognized nuclear cardiology researcher, assumed the position of chairman August 1. He had been acting chairman since June 28, when his predecessor, Dr. Robert N. Berk, resigned.

Also on August 1, he was promoted

James Willerson, professor of internal medicine, headed the committee.

"The committee feels that Dr. Parkey is one of the most exciting and capable young men in the field of radiology and that he will provide the necessary leadership and direction for the Radiology Department," Dr. Willerson said.

Dr. Parkey, in cooperation with Southwestern Medical School (SMS) Dean Frederick Bonte and

conceiving and developing the tech-

Pyrophosphate imaging to detect

acute myocardial infarction. The

technology is used worldwide as

sensitive non-invasive ways available to pinpoint dead heart tissue.

He received his M.D. degree from SMS in 1965, and was a radiology resident at SMS from 1966 to 1969. Dr. Parkey also holds a B.S. degree in physics from The University of Texas, Austin.

After completing his residency, Dr. Parkey joined the SMS faculty July 1, 1970, as an assistant professor of radiology. He was promoted to professor September 1, 1974, and assumed the position of

His many membership affiliations



representative to the intersociety committee on heart diseases for The Society of Nuclear Medicine; trustee of the Southwest Chapter of The Society of Nuclear Medicine; the American Medical Association and

Top: Jack Reynolds, Frederick Bonte, and Robert Berk in front of the Frederick J. Bonte Library.

Below: The Parkland publication Hospital Highlights announces Parkey's appointment as chair of the Department of Radiology.

Center at Dallas (THSCD). He was formerly chief of Nuclear Medicine at BMH and associate

CHAPTER FOUR

BY THE MID-1970s, friends and former residents began contributing funds to a project that would serve as a token of their esteem for their former radiology department chair. On June 25, 1976 the Frederick J. Bonte, M.D., Library officially opened on the ground floor of Parkland hospital. It included a complete radiological reference library, a learning file and a student study area. The learning file consisted of 1,200 cases containing 3,600 full-size reproductions of original radiographs that made up an instructional system for basic education in the interpretive aspects of the radiological examination.

In November of the same year, Robert Berk wrote a letter to Morris Ziff, M.D., then chair of the promotions and tenure committee, in which he commented on the mentor relationship between Bonte and Robert Parkey, while also acknowledging that Parkey's talents should be recognized with promotion to full professor.



Image courtesy of Donald W. Seldin

| Morris Ziff

"WITH REMARKABLY LITTLE SUPPORT from the administration of Parkland Hospital in terms of space and equipment, Dr. Parkey has built one of the busiest nuclear medicine departments in the country and under his guidance the service continues to burgeon. This is testimony to Dr. Parkey's ability to attract and to keep excellent technicians, residents and fellows and evidence of his remarkable personal charm used in negotiating for equipment and grants from a number of outside sources."

— Robert Berk

1975

*A new ultrasound lab opens,
equipped with latest
technology, thanks to a
\$100,000 grant from the
Hillcrest Foundation.*

"Dr. Parkey is chief of nuclear medicine, a position he has held since Dr. Bonte left the Radiology Department to become Dean," Berk wrote. "In fact, Dr. Bonte wisely recognized Dr. Parkey's genius while Dr. Parkey was a resident and, in the Seldin tradition, he carefully nurtured Dr. Parkey's early academic career. Dr. Parkey has proved himself to be an able administrator, having created an efficient and respected nuclear medicine service. With remarkably little support from the administration of Parkland hospital in terms of space and equipment, Dr. Parkey has built one of the busiest nuclear medicine departments in the country and under his guidance the service continues to burgeon. This is testimony to Dr. Parkey's ability to attract and to keep excellent technicians, residents and fellows and evidence of his remarkable personal charm used in negotiating for equipment and grants from a number of outside sources."



Donald W. Seldin

Donald Seldin, to whom Berk referred in his letter, was the acclaimed chair of UT Southwestern's Department of Internal Medicine. He was known for his ability to recruit distinguished physicians and researchers, and guide the development of the brightest of his own students into brilliant faculty. The comparison was fitting, as Parkey would later prove.

During his brief tenure as radiology chair, Berk reorganized diagnostic radiology, encouraging senior faculty to focus primarily on their particular interests. Then, three years after his arrival in Dallas, he received an offer to return to his beloved southern California, as chair of the University of California–San Diego's radiology department.

"The faculty was excellent and it was wonderful to work with them all," said Berk, reflecting on his time at UT Southwestern. "One person I remember in particular is Edward Christensen. He was such a nice person and a big help to reorganize the department. He was also a superb radiologist, one of the best I've ever known."



Edward
Christensen

Parkey assumed the role of acting chair in June and a search committee was formed to find Berk's replacement. James Willerson led the recruitment effort.

"The committee interviewed me, but I wanted to do research," Parkey said. "They then recruited a fellow from Michigan, but wouldn't give him the money to fix all the holes in the department. As acting chair, I knew what the holes were, so when they came back to me I negotiated and took 24 hours to consider. I realized it would be crazy not to take it."



Robert Parkey

In August 1977, Parkey became the third chair of the Department of Radiology. He was not yet 40 years old.

"The committee feels that Dr. Parkey is one of the most exciting and capable young men in the field of radiology and that he will provide the necessary leadership and direction for the radiology department," said Willerson in an appointment announcement. "And while maintaining the extremely talented teaching and diagnostic reputation that exists at present, we believe that Dr. Parkey will further stimulate research efforts, not only in his specialty but broadly."

JUNE 1976

The Frederick J. Bonte, M.D.
library officially opens.



From left, Jack Reynolds, Frederick Bonte and Robert Berk at the opening of the Bonte library.



MAY 1976

Jack Reynolds is named a
Piper Professor.

Less than then three months later, Parkey and Willerson discovered "dynamic blood pool imaging," a technique involving injection of a chemical compound that tagged red blood cells with a small amount of radioactivity as they circulated throughout the bloodstream. With the bloodstream illuminated, scientists could look through a patient's chest wall with a radiation sensing gamma camera and see the chambers of the heart pumping blood. The test demonstrated the functionality of the normal and diseased heart and was useful for determining the impact of a heart attack on the heart's performance.

The gamma camera was connected to a computer, which processed the images and produced a "moving picture" of the heart beating that could be displayed on a television monitor. A videotape machine provided "instant replays," like those seen on televised football games. The computerized system made it possible to analyze the movements of heart walls in great detail and to measure the volume of blood pumped by the heart with each beat.

"We can see if a section of the heart wall is not working correctly, and we can tell if the heart isn't pumping the amount of blood that it should," Parkey said at the time in a UT Southwestern press release.

In contrast to cardiac catheterization, a relatively complicated, invasive and expensive procedure, dynamic blood pool imaging proved to be fast, accurate and safe. Another advantage was the radioactive label remained in the bloodstream for several hours, allowing for additional physiological analyses, such as exercise stress tests and assessments of the effectiveness of various drugs.

Also in 1977, while serving as a visiting adjunct professor at the University of Copenhagen in Denmark, Ernest Stokely became lead designer for a computer-based dynamic scintillation tomograph that measured brain blood flow.

"Measuring blood flow to the brain in cross section had never been done before," Stokely recalled. "We built a prototype machine that produced three cross-sectional images of blood flow in the brain. The tracer used was radioactive Xenon gas. It created exciting images, and Dr. Bonte was instrumental in getting one of these instruments into the radiology department at Southwestern."



Ernest Stokely

JUNE 1977

Robert Berk resigns as department chair to become chair of radiology at the University of California—San Diego.



"MEASURING BLOOD FLOW to the brain in cross section had never been done before. We built a prototype machine that produced three cross-sectional images of blood flow in the brain. ... It created exciting images, and Dr. Bonte was instrumental in getting one of these instruments into the radiology department at Southwestern."



AUGUST 1977

Robert Parkey becomes the
Department of Radiology's
third chair.

For the Dallas Veterans Administration hospital, Parkey selected UT Southwestern classmate Ann Parker, M.D., as its new chief in 1978. They worked diligently to upgrade radiology services at the VA, and Parkey credited Parker for "helping turn things around" during her years on the job.

The field of nuclear cardiology was in a period of rapid expansion. But the mere mention of "nuclear" made people nervous. In March 1979, a partial nuclear meltdown occurred at Three Mile Island, a nuclear reactor facility in Dauphin County, Pennsylvania. At the time, it was the worst commercial nuclear power plant accident in the U.S., prompting calls for the closure of disposal sites for low-level radioactive waste.

"I can understand the concern over burial of fuel rods from a reactor, a high-grade hazard," said Bonte in a UT Southwestern press release. "I can understand concern of disposal of waste from a reactor that produces plutonium for weapons. That's highly lethal

"BUT IN NUCLEAR MEDICINE we're not talking about a radiation hazard or a biologically devastating material. We're talking about mildly radioactive refuse from research and everyday medical practice. And if there is no way of disposing of this material, research and medical management will be seriously impaired and for no good reason."

— Frederick Bonte

NOVEMBER 1977

Robert Parkey
and associates discover
"dynamic blood
pool imaging."





Frederick Bonte demonstrates a nuclear scanner with a lab assistant as Robert Parkey adjusts the equipment.

stuff. But in nuclear medicine we're not talking about a radiation hazard or a biologically devastating material. We're talking about mildly radioactive refuse from research and everyday medical practice. And if there is no way of disposing of this material, research and medical management will be seriously impaired and for no good reason."

At the time disposal sites in Nevada and Washington had been shuttered by their governors because of perceived threats to humans and the environment, leaving only South Carolina as the single disposal site for all low-level waste. All three sites had once again opened, but were subject to closure at the time of Bonte's comments.

"The disposal sites must remain in operation," Bonte argued. "If medicine is to move ahead or even stay where it is. These diagnostic techniques are too important in everyday health care to be lost in the shuffle and scare over imagined dangers."



Mary Esther Gaulden

The department's nuclear medicine section was not the only one in the headlines. Starting in the 1970s, Parkland led the nation in performing abdominal X-rays on a regular basis. Under the guidance of Christensen and Mary Esther Gaulden, protocols were put in place to prevent damage to unborn babies. Specifically, abdominal X-rays were postponed if female patients were beyond the first 10 days after onset of their last menstrual cycles.

Gaulden had conducted her own research supporting why such protocols were necessary.

"I feel too many women are receiving postponable X-rays at a very early and especially vulnerable stage of embryonic development — the first six weeks — generally way before the person realizes she is pregnant," she said in a 1977 UT Southwestern press release. "We found that 5 percent of 2,000 women whose X-rays we delayed at Parkland were, in fact, pregnant. We know that diagnostic X-rays to the child at any time during pregnancy increases by a small amount the chances of leukemia and other types of tumors after birth."

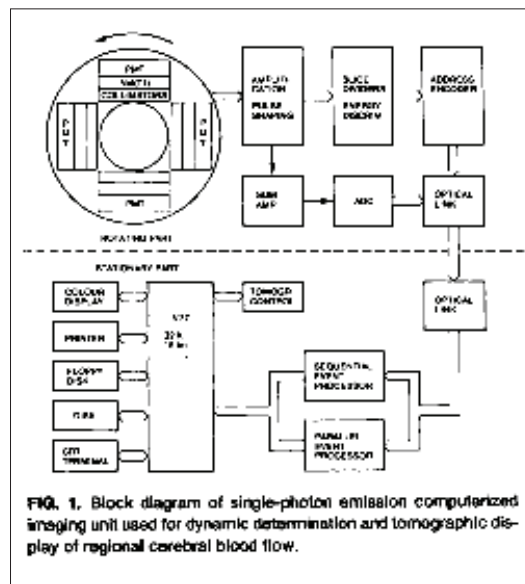
GAULDEN ISSUED A WARNING to the National Bureau of Radiological Health, which was tasked with alerting women to the possible dangers of radiation in early pregnancy so patients could inform their physicians when such a possibility existed. Her work led to Parkland's protocols being adopted nationwide and the use of lead aprons as a standard for women in diagnostic radiology.

Gaulden, who then held the Emma Freeman Professorship of Radiology at UT Southwestern, emphasized she was referring only to abdominal X-rays — not those involving chest, dental or other locations. She also noted that there were certain emergency situations in which the need for X-rays outweighed the risks to the developing fetus.

Gaulden issued a warning to the National Bureau of Radiological Health, which was tasked with alerting women to the possible dangers of radiation in early pregnancy so patients could inform their physicians when such a possibility existed. Her work led to Parkland's protocols being adopted nationwide and the use of lead aprons as a standard for women in diagnostic radiology.

Gaulden also had an influence on women medical students, residents, faculty and staff at UT Southwestern.

"She was a big supporter of women in science," Bonte said. "There hadn't been much leadership for women at Southwestern, and then, suddenly, there's Mary Esther. She was leader of this crop of women employees, some of them in secretarial positions, others graduate students, and others among the few female faculty members. When I came to Southwestern, there had only been one female faculty member, pediatric cardiologist Gladys Fashena. It was tough for women to get the recognition they deserved. However, Mary Esther began to plume for women to be recognized around the medical center and she ran finally into people who would listen to her."



1977

Ernest Stokely and associates design a computer-based dynamic scintillation tomograph to measure brain blood flow.

In 1978, the Women's Action Group awarded Gaulden its outstanding achievement award for her service to UT Southwestern. In a campus story about the honor, Suzanne Ahn, M.D., noted that Gaulden provided moral support and guidance for many issues concerning women and had the respect of her department, others on campus and the community.



Jack Reynolds

In addition to Gaulden, Jack Reynolds also continued making a lasting impression on future generations of physicians.

In May 1976, the Minnie Stevens Piper Foundation, a nonprofit charitable corporation based in San Antonio, named Reynolds one of the state's 10 outstanding teachers. The foundation cited Reynolds for his scientific and scholarly achievements, and for his dedication to the teaching profession, naming him a Piper Professor.

"Of the members of our faculty, I can think of no one more deserving of this recognition," Charles Sprague said in a press release. "The medical students perceive Dr. Reynolds as both a gifted teacher and a warm, personal friend. Although it is difficult to document or quantitate this aspect of his teaching efforts, it is surely a major contribution to the success of our medical school."

At Parkland hospital, its School of Radiologic Technology (which closed in 1996) was educating technologists to assist radiologists with performing diagnostic imaging and administer radiation therapy treatments. Judy Cooper, Ph.D., a 1975 graduate of the program who served as director of ambulatory imaging at the time of this publication, had been unsure of the direction she wanted her life to take. At the suggestion of her sister's husband, she applied to the school to become a technologist.

"After graduating I immediately began working at Parkland," she said. "It was a real eye opener; I hadn't realized how involved radiology was in every aspect of medicine and

don't think there's a disease that imaging doesn't touch. Back then the technologist did everything, even mammography, with Kodak printers."

Two years later, Bonte recruited cardiologist Charles Mullins, M.D., to act as a liaison between the medical center and Parkland hospital. He would become chief executive officer of Parkland from 1979 to 1981, before leaving to serve as Executive Vice Chancellor for Health Affairs of The University of Texas System.

Sprague called Mullins appointment, "an important step in trying to create the optimal interaction between the medical school and the hospital district."

But Parkland was facing immeasurable challenges. In the late 1970s, the hospital was described as "physically falling apart." A 1978 patient care committee reported serious deficiencies, including code violations, outdated technology and inadequate staffing and funding in 77 areas. Recommendations to address the shortfalls were ignored until longtime Dallas civic leader Ralph Rogers became chair of the Dallas County Hospital District Board of Managers.

Not only would Rogers lead the campaign that resulted in an \$80 million bond package for Parkland's renovation, he made possible a center to house one of the radiology department's greatest (and largest) advancements during the 1980s: magnetic resonance imaging.



Charles Mullins



UT Health Science Center at Dallas soon after expansion in 1976.

LATE 1970s

Medical student enrollment at UT Health Science Center at Dallas reaches 800. New training programs in allied health sciences and graduate biomedical research attracts an additional 400 students.



PROFILES *in* LEADERSHIP



Dr. Jack Reynolds makes one last point to senior medical students Roger Mendelson, center, and Alan Frierson, left, before their graduation this spring.

Outstanding teaching abilities win Reynolds piper professorship

Dr. Jack Reynolds, professor and vice-chairman of radiology at the health science center, has been named one of the state's 10 outstanding teachers by the Minnie Stevens Piper Foundation.

The foundation cited Dr. Reynolds for his scientific and scholarly achievement and for his dedication to the teaching profession in naming him a 1976 Piper Professor.

The purpose of the award is to give recognition to the teaching profession, although research and publications are also considered.

by him have voted Dr. Reynolds their outstanding teacher of the year. Already this year's sophomore class of medical students voted Dr. Reynolds one of their four outstanding teachers. On three occasions the entire student body has voted him the outstanding teacher of all of those participating in their undergraduate medical years.

"The medical students perceive Dr. Reynolds as both a gifted teacher and a warm, personal friend. Although it is not often that a teacher is also a friend, Dr. Reynolds has managed to be both."

new national epilepsy effort

Dr. David D. Daly, professor of neurology at Southwestern, has been appointed chairman of the new National Commission for the Control of Epilepsy and Its Consequences.

Established by Congress as special agency to confront the problems of epilepsy in the United States, the committee consists of four physicians or scientists representing major disciplines involving epilepsy, two physicians or scientists representing public health and rehabilitation and three members of the general public.

The mandate given to the new National Epilepsy Commission is that it:

1. Make a comprehensive study of the state of the art of medical and social management of the epilepsies in the United States.
2. Investigate and make recommendations concerning the proper roles of federal and state governments and national and local, public and private agencies in research, prevention, identification, treatment and rehabilitation of persons with epilepsy.
3. Develop a comprehensive national plan for the control of epilepsy and its consequences based on the most thorough, complete and accurate data and information available on the disorder.

The formation of the commission is a significant step in the effort to control epilepsy and its consequences.



Dr. David D. Daly

Faculty update

Dr. Roger H. Ung, internal medicine at the center and clinical in Veterans Administration, received a coveted Honorary Medicine degree from the University of Geneva.

Dr. M.T. Jenkins, anesthesiology, has been elected to a three-year term on the Council on Medical Education of three representatives of the Council of Medical Specialties.

Dr. Morton M. ...

JACK REYNOLDS, M.D.

ACK REYNOLDS was born in Houston, where he and his family lived until they relocated to New Jersey. He attended Wesleyan University in Middletown, Connecticut, before disrupting his studies to serve as a military police officer and an Army medical technician during World War II. After the war, Reynolds returned to Wesleyan to complete his undergraduate degree before pursuing a medical education at the Columbia College of Physicians and Surgeons in New York. He received his medical degree in 1952.

While in residency training at St. Luke's Hospital in New York, Reynolds traveled to Texas to interview for a position in the new, very small, Department of Radiology at UT Southwestern.

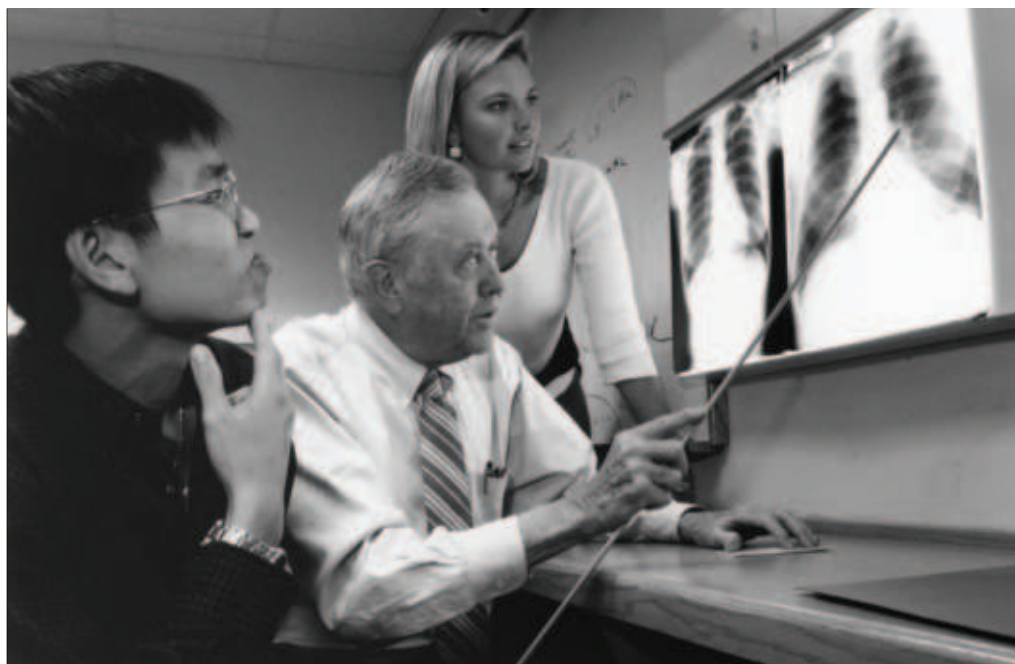
"I always wanted to get back to Texas, and on a vacation one year, I came as a resident to see if there were any openings," he recalled in a *Center Times* article. "Dr. Bonte was the chairman, so I came to see him; he decided I was alive and was almost finished with my residency and signed me up."

Reynolds began teaching at UT Southwestern in 1957. His talents were quickly evident and the medical center specifically created a curriculum that allowed him to teach students throughout their four years. He left such an impression on students that they frequently asked to take his classes a second time. Fourth-year medical students lined up for his elective course in diagnostic radiology, which simply became known as "Jack Reynolds."



"DR. BONTE was the chairman so I came to see him; he decided I was alive and was almost finished with my residency and signed me up."

— Jack Reynolds



Jack Reynolds and medical students study lung X-rays.

His effectiveness and dedication in the classroom were reflected by the honors bestowed upon him throughout the years. The Minnie Stevens Piper Foundation named him a Piper Professor in 1976, an honor bestowed each year on 10 outstanding Texas teachers in higher learning. In 1985, he received the Southwestern Alumni Teaching Award. The UT System Board of Regents named him an Ashbel Smith Professor in 1991, one of its highest honors.

Students frequently considered Reynolds their best teacher for a particular year, and he was selected many times by the senior class to serve as one of its marshals for graduation ceremonies. In 2001, a group of former students raised \$400,000 to help establish the Dr. Jack Reynolds Chair in Radiology, which seeks to advance the careers of other outstanding radiology teachers.

"I love it [teaching]," Reynolds once said. "It's a challenge and makes you stay informed about your subject. You get too narrow, too specialized and behind the times if you're not forced to keep up because the students make you keep up. The students are smart and ask probing questions, and if you can't answer those questions, you're not doing your job."

In addition to teaching, Reynolds wrote several books and published numerous papers.

In 1965, he published *The Roentgenological Features of Sickle Cell Disease and Related Hemoglobinopathies*, a landmark textbook that focused on how X-ray films revealed the effects of sickle cell disease.

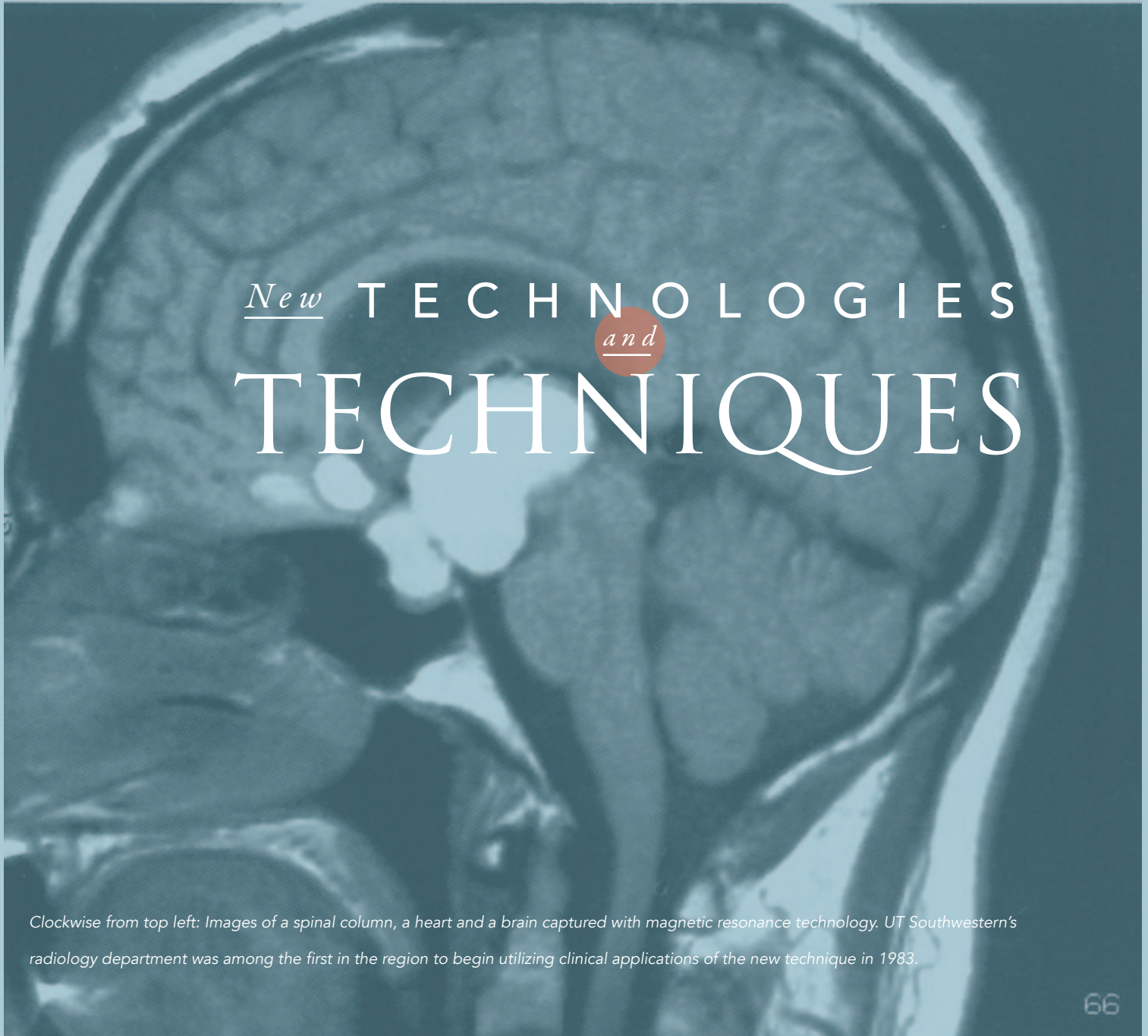
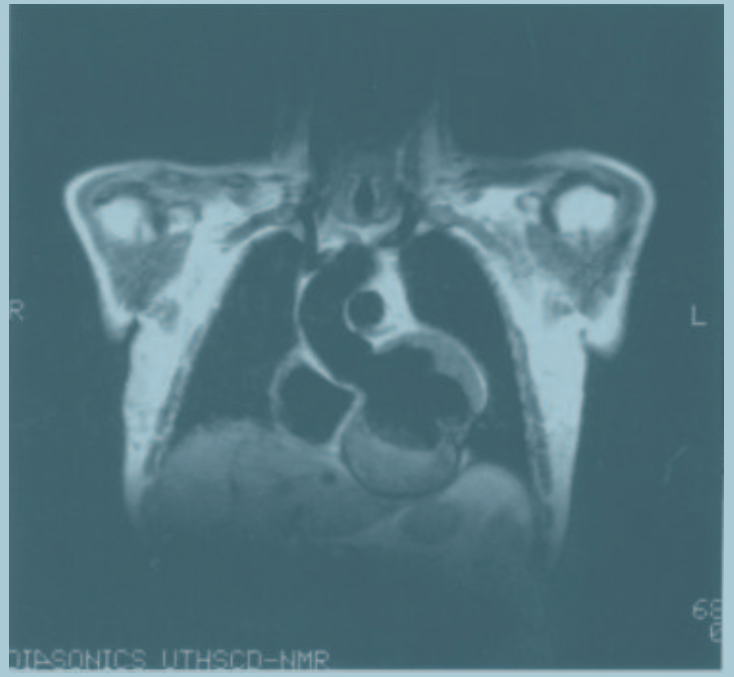
Reynolds and his wife, Mary Jane "Skippy," had a son and two grandchildren. He retired from full-time teaching in 1995, but continued teaching part-time until 2005. Reynolds died in 2007.



Jack Reynolds



Reynolds enjoyed creating small pieces of art out of found objects and giving them to friends and family.

A large, high-resolution sagittal MRI scan of a human brain, showing the cerebral cortex, white matter, and brainstem. The image is in grayscale, with the brain appearing as a complex, multi-layered structure. The text "DIPSONICS UTHSCD-NMR" is visible at the bottom left, and "66" is visible at the bottom right.

New TECHNOLOGIES and TECHNIQUES

Clockwise from top left: Images of a spinal column, a heart and a brain captured with magnetic resonance technology. UT Southwestern's radiology department was among the first in the region to begin utilizing clinical applications of the new technique in 1983.

CHAPTER 5

WHEN ROBERT PARKEY became the chair of radiology in 1977, he used \$40,000 of the chair's fund to purchase a high field magnet from the University of Chicago. With this device, the department was able to start a fledgling research project in magnetic resonance spectroscopy (MRS). Ray Nunnally, Ph.D., a biophysicist, was recruited from Johns Hopkins University in Baltimore to head the effort.

Meanwhile, new construction at The University of Texas Health Science Center at Dallas, completed at the end of 1979, had increased available space to more than 1.5 million square feet. The university had an annual budget of \$90 million, and more than 500 faculty members. Medical student enrollment had grown to 800, with new training programs in allied health sciences and graduate biomedical research attracting an additional 400 students at the bachelor's, master's, and doctoral levels.

In February 1980, Frederick Bonte became the 97th president of the Dallas County Medical Society. A few months later, The University of Texas Board of Regents and the State Coordinating Board approved the establishment of a new Center for Nuclear Medicine at UT Southwestern. Upon being appointed its first director, Bonte relinquished his post as dean of the medical school.



1977

The radiology department purchases a high field magnet from the University of Chicago.



1980

Frederick Bonte is elected president of the Dallas County Medical Society.

Frederick Bonte

1980

*Frederick Bonte
relinquishes his role as dean
of the medical school to
become director of the
Center for Nuclear Medicine.*

"Over the past several years, faculty members at this institution have made a number of major contributions in the field of nuclear medicine so that we now enjoy an enviable national and international reputation in this area," Charles Sprague said in announcing the center. "To capitalize on our advantageous position, it has been decided to create a Center for Nuclear Medicine that would not only serve to coordinate the present efforts of faculty members in several different departments, but would permit us to recruit selectively additional faculty so as to strengthen the overall program."



Kern Wildenthal

"We are all most appreciative and grateful for Dr. Bonte's successful efforts as dean of the medical school and look forward to his equally successful tenure as director of the Center for Nuclear Medicine," Sprague concluded.

Kern Wildenthal, M.D., Ph.D., succeeded Bonte as dean.

In December, longtime radiology faculty member Edward Christensen experienced a heart attack and died at this home. He was 51 years old.

"When he arrived, the Department of Radiology was new, understaffed, and struggling to provide adequate teaching and research programs in the presence of crushing clinical demands," wrote Jack Reynolds in an essay remembering Christensen. "He soon became chief of diagnostic radiology and the department began its ascendancy."

Reynolds recalled Christensen's early investigations in which he designed a model and tested various imaging techniques for the study of pericardial effusion. Several articles dealing with grids and the physics of diagnostic radiology followed.

Christensen also made important contributions concerning perception of the roentgen image, using a thoracic test object of his own design. He demonstrated a particular skill and interest in pulmonary radiology, which led to a number of major publications, including definitive articles on atypical mycobacteria.

Michael Landay, M.D., a professor of radiology in the cardiothoracic division at the time of this publication, had worked with Christensen on several cardiothoracic studies, starting in the 1970s. He described Christensen as a star around whom many planets orbited, and also a wonderful mentor.



1980

Longtime radiology faculty member Edward Christensen dies unexpectedly at his home at the age of 51.

Regarding the textbook *Christensen's Introduction to the Physics of Diagnostic Radiology*, Reynolds wrote,

"Although a modest man, he was greatly moved when he received 'fan letters' from elated examinees thanking him for helping them pass physics. He loved to teach and was very good at it."

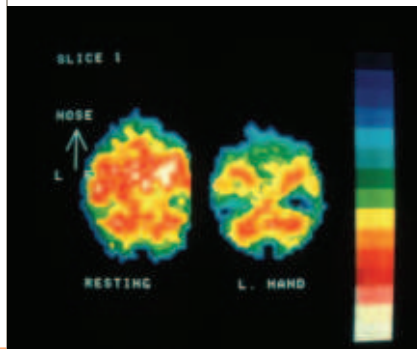
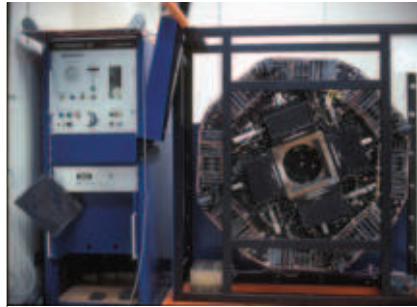
"ALTHOUGH A MODEST MAN, he was greatly moved when he received 'fan letters' from elated examinees thanking him for helping them pass physics. He loved to teach and was very good at it."

— Jack Reynolds, referring to Edward Christianson and his book, *Christensen's Introduction to the The Physics of Diagnostic Radiology*

To honor Christensen, the M.R. and Evelyn Hudson Foundation established a radiology professorship at UT Southwestern. George Curry was its inaugural holder.



George Curry



1981
A single-photon dynamic
computer-assisted
tomographic scanner is used
to map blood flow inside
the brain.

revealed how computerized color pictures of the brain's blood flow could provide an early warning of stroke.

Areas of the brain "working" the hardest lit up in the pictures, while areas where stroke had deprived tissue blood flow appeared "cold." The scanner also showed the benefits of increased blood flow in patients who had carotid endarterectomies. The post-operative readouts of increased blood flow on the scanning screen were often accompanied by increased intellectual activity in the patients.

The images were acquired using a single-photon dynamic computer-assisted tomographic scanner during four-minute sessions that started when a patient inhaled radioactive xenon gas. The device was the second of its kind in the world to use inhalation of radioactive gas as a non-invasive method for making diagnoses. Stokely and his associates developed the original during his time in Copenhagen in the 1970s. With Parkey's support, Bonte raised funding for the machine, which was operated in the Nuclear Medicine Center under his direction.

"We are very pleased to provide a way to pay tribute to Dr. Christensen, who meant a great deal to a great many people," said C. Wallace "Wally" Hooser, M.D., a former UT Southwestern radiology resident and then senior vice president of the Hudson Foundation.

"The professorship also finds a fitting holder in George Curry, one of the finest radiologists and teachers Texas has to offer."

The following year, Bonte and Ernest Stokely presented a report at the American Heart Association's annual meeting at the Dallas Convention Center. They

"Not only are we being given an invaluable tool to work within disease states, but we will be able to check out various theories we have held about the normal brain," Bonte said in a news release. The Southwestern Medical Foundation and the Harry S. Moss Heart Trust supported the research.

Nunnally also received financial assistance. In 1981, he won a grant from the American Heart Association and was working with nuclear magnetic resonance (NMR), an experimental technique that provided information and pictures of chemical activity inside living tissues.

"This technique would allow doctors to follow how effective a treatment is for a given disease and determine whether the body's metabolism is returning to a normal state," Nunnally said in a *Dallas Morning News* article. "This is something we don't have in the arsenal of diagnostic tools. (Until now) there have been no clear-cut ways that don't involve an invasive procedure, radioactive tracers or the dangers of radiation."

In 1983, the radiology department partnered with the Dallas Museum of Natural Science to unravel the mysteries behind one of the oldest known complete skeletal remains of a human in North America. Affectionately named Lee Ann on UT Southwestern health records, Texas Highway Department archaeologists had uncovered the remains near the central Texas town of Leander. She was thought to be 20 years old when she died 10,000 years ago.

Geral Dietz, M.D., then associate professor of radiology, concluded both Lee Ann's diet and lifestyle lead to admirable health.



The 10,000-year-old bones of a woman, affectionately named Lee Ann.



Mary Nell and Ralph B. Rogers

"Bone-wise, her nutritional status was better than our own," he told *The Dallas Morning News*. "She's in as good a shape as anyone you'll find running around here. The experts credit a life considerably more active than our own."

Around the same time, the Department of Radiology was seeking to bring the first clinical magnetic resonance imaging (MRI) unit outside of California to UT Southwestern. Ralph Rogers,

whose leadership resulted in a taxpayer-approved expansion and enhancement of Parkland hospital, played a vital role securing the technology.

"Dr. Jim Willerson, who was here at the time, felt MR had tremendous potential in



Jeffrey C. Weinreb

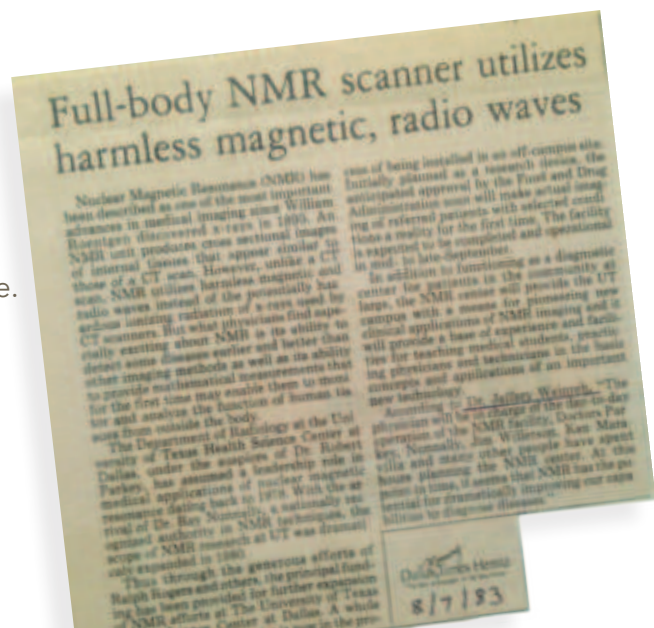
medicine," Parkey said in a *Center Times* article. "Ralph Rogers, a friend of the university and of Willerson, decided to support it."

Rogers helped raise more than \$3 million to purchase the MRI clinical unit from a high-tech medical equipment manufacturer. Because there was no space on campus to house the device, a building was purchased and renovated at Record Crossing Road. Known as the

"WE TRAINED SOME OF THE FIRST MRI TECHNOLOGISTS

in the country at the Record Crossing site.

We also had one of the first fellowship programs in body MRI."



Biomedical Magnetic Resonance Center, its first magnet was a low-field unit designed to provide images of the entire body. Once installed, the MR device was one of only 10 clinical units in the nation at the time. Nunnally served as the center's director.

Jeffrey C. Weinreb, M.D., a former UT Southwestern faculty member and, at the time of this writing, professor of diagnostic radiology at the Yale School of Medicine, remembered that time well.

"We trained some of the first MRI technologists in the country at the Record Crossing site," he said. "We also had one of the first fellowship programs in body MRI. Dr. Parkey had incredible foresight to pursue MRI early and hired a lot of really good people. The reason I went there and thrived is because he trusted me and let me do what I needed to. He never wanted credit, was always about letting other people shine, but believe me he was behind it all. Everybody who's been under his leadership appreciates that."

The clinical unit was divided into three sections of functional use. MR imaging of the body was under Weinreb's direction. MR imaging for neurological use was directed by Ken Maravilla, M.D. Cardiac imaging, in a joint effort between radiology and the Ischemic Heart Center, was overseen by Willerson and cardiologist Ron Peshock, M.D., professor of radiology and the department's Vice Chair of Informatics at the time of this writing.

Under their leadership, significant advances were made in MRI. Cholesterol plaque was revealed in arterial walls. Brain lesions from multiple sclerosis were detected with great accuracy. Diseases of the liver, impossible to see with a CT scan, and small bone tumors growing inside marrow were found. Fetal imaging revealed problems with congenital abnormalities, such as a lack of proper lung development. Head injuries and neurologic disorders involving anatomical abnormalities could be seen with greater clarity, making diagnosis more accurate and, at times, eliminating the need for surgery.



1982

Dallas County taxpayers approve a major expansion and enhancement of Parkland Memorial Hospital, enabling a significant upgrade of clinical services.



Ron Peshock and students.



1982

Biomedical Magnetic Resonance Center is established with philanthropic funds at Record Crossing Road.

"Radiologists' jobs have always been to produce some kind of image to show what's wrong and to do it with the least risk to the patient," Parkey said in a *Dallas Morning News* article. "But now, technology is permitting us to produce much clearer, sharper images that are also safer."

Weinreb said it's hard to imagine that MRI was still a nascent technology in the early 1980s. "When I started out, if you had a pain in your abdomen, they'd open you up to figure out what was going on. Within the timeframe of my professional life it all changed. CT and ultrasound played big parts, but I consider MRI the biggest innovation."

In 1985 the Biomedical Magnetic Resonance Center received a five-year, \$2.7 million grant from the National Institutes of Health to become a regional biotechnology resource, to which investigators from Texas and surrounding states had access. The grant enabled the center to purchase an MRI unit that operated at a magnetic field more than double that of other whole-body MRI machines. The center became one of only nine such federally funded facilities for MRI research in the U.S.

With additional federal grants and financial assistance from

Diasonics, a second magnet was obtained to expand the department's MRS effort. The second magnet's task was to monitor body metabolism and display minute chemical changes within the body. To accomplish this task, Nunnally modified the device, making it one of the first metabolic imaging magnets in the nation.

The cover of the February 1990 issue of *Center Times* featured the installation of the nine-ton MRI magnet at the Mary Nell and Ralph B. Rogers Magnetic Resonance Center.



MRI growth was not the only thing on Parkey's mind. He was also looking for an expert in the field of angiography to join the department.

"The first question I asked when looking for an angiographer was 'Who is the best in the nation?'" Parkey recalled. "Everyone said Helen Redman. So I called her at the University of California [San Francisco] and told her everyone said you're the one to call. She gave me some names and then, while we're talking, started to laugh. She said, 'You're making all this sound so good, maybe I should consider.' I nearly dropped the phone. I said, 'Whoa, whoa. Let's talk about this. What would it take to get you to come?' So we talked and she came."

Helen Redman, M.D., was one of the first radiologists to use angiography. When the technique was introduced in the U.S., she was completing her residency at what was then known as Palo Alto-Stanford Hospital Center. Redman not only was its first woman resident, she also served as chief resident and as an acting instructor. She was an early adapter of ultrasound and was one of the first radiologists west of the Mississippi River to use a body computed tomography (CT) scanner.

Diane Twickler, M.D., a professor of radiology and the department's vice chair of academic affairs at the time of this publication, graduated from UT Southwestern in 1984, a year after Redman arrived. She went on to complete her internship, residency, and fellowship training at the medical center.



Robert Parkey



Helen Redman



Diane Twickler

"I TRAINED WITH DR. REDMAN and she truly was one of the premiere women in radiology."

"I trained with Dr. Redman and she truly was one of the premiere women in radiology," Twickler said. "She co-authored one of the first textbooks on gastrointestinal angiography, was a national figure, and held many titles as the first woman. She was tall, prestigious, and, in many respects, quite terrifying. She had a very, very high level of expectation of everybody around her. As a student, it can be hard to appreciate that, but in retrospect you are quite grateful. She was a major pillar of the residency program when I was a resident here."

"NOT ONLY WAS NANCY SMART, she could go toe to toe with Dr. Guido Currarino, whom she did her residency under. This was no easy feat. He'd run off his fair share of residents."

— Frederick Bonte

It was during this time that Nancy Rollins, M.D., was completing her internship and residency training at UT Southwestern. She would go on to become an expert in pediatric angiography and chief of the department's pediatric radiology division. Bonte remembered their first encounter.

"The day after I'd left the dean's office, I reported for duty at the Center for Nuclear Medicine. A woman, almost as tall as me, emerges from the office, walks over and sticks out her hand. We shake hands and she tells me, 'I'm Nancy Rollins. I was No. 1 in my class at Galveston.' Not only was Nancy smart, she could go toe to toe with Dr. Guido Currarino, whom she did her residency under. This was no easy feat. He'd run off his fair share of residents. One day in passing he told me, 'This Rollins, she's different. Think I'm going to take her on.'"

Then, in 1985, an event occurred that ensured UT Southwestern's place in medical research history: Two months after Sprague announced his plan to retire as president, faculty members Michael S. Brown, M.D., and Joseph L. Goldstein, M.D., received the Nobel Prize in Physiology for their discoveries concerning "the regulation of cholesterol metabolism." It was the first Nobel awarded to Texas researchers, and a fitting culmination to Sprague's two decades of leadership.



1985

Michael Brown and Joseph Goldstein become the first Texas scientists to receive a Nobel Prize.

PROFILES *in* LEADERSHIP



DEPARTMENT OF RADIOLOGY

SOUTHWESTERN MEDICAL SCHOOL
GRADUATE SCHOOL OF BIOMEDICAL SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCES

November 8, 1976

Morris Ziff, M.D.
Chairman, Promotions and Tenure Committee
University of Texas Health Science Center
Dallas, Texas

Dear Morris:

It is with a keen sense of pride and satisfaction that I propose Dr. Robert Parkey to you and your committee for consideration for promotion to Full Professor in the Department of Radiology. Dr. Parkey's magnificent accomplishments in every aspect of academic life have brought him to the attention of the University of Texas Health Science Center at Dallas.

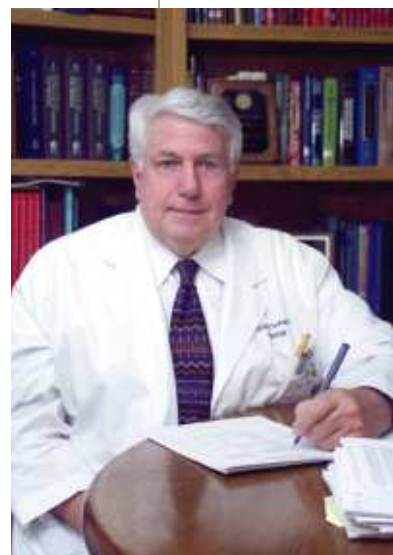
ROBERT PARKEY, M.D.

A NATIVE TEXAN, Robert Parkey grew up in the small town of Krum, located less than an hour's drive from Dallas. He attended the University of Texas at Austin, where he received a bachelor's degree in physics. He then returned to North Texas to pursue his medical degree at UT Southwestern, a place that would transform his life.

Following his 1965 graduation, Parkey completed his residency training in diagnostic radiology at Parkland hospital. At the suggestion of Frederick Bonte, then chair of radiology at UT Southwestern, he and his family left Texas so he could pursue a fellowship in radiological data processing at the University of Missouri. The program was sponsored by the National Institute of General Medical Sciences.

"Fred is my mentor and the one who steered me into academic radiology and nuclear medicine," Parkey said. "He deserves credit for not just recruiting me, but also recruiting the Curry brothers, Bill Kilman and many others."

After returning to UT Southwestern in 1970, Parkey began a distinguished career that would span decades at the medical center. In 1971, the prestigious National Research Council named him a James Picker Foundation Scholar in Radiology Research for his work investigating small computer processing of scintigram data.



"FRED IS MY MENTOR and the one who steered me into academic radiology and nuclear medicine. He deserves credit for not just recruiting me, but also recruiting the Curry brothers, Bill Killman and many others."

— Robert Parkey



Robert Parkey and his
trademark cigar.

When Bonte became dean of UT Southwestern Medical School, Parkey became chief of nuclear medicine. Working with Bonte and James Willerson, he helped develop a nuclear scanning technique that allowed viewing and imaging of a myocardial infarct. The technique would be used all over the world to diagnose, localize, and measure acute heart attacks. It was also one of the most sensitive non-invasive ways then available to identify dead heart tissue.

"We got a lot of publications and I did a lot of traveling," Parkey recalled. "It was something completely new and responsible for most of my papers."

In 1977, department chair Robert Berk resigned to become chair of radiology at the University of California–San Diego. Parkey, who was still in his 30s, was appointed acting chair. After several months, the search committee determined he should hold the position permanently.

After deep reflection, Parkey accepted.

Shortly after his appointment, Parkey, working with Willerson, discovered "dynamic blood pool imaging," a technique involving injection of a chemical compound that tagged red blood cells with a small amount of radioactivity as they circulated throughout the bloodstream.

Up to this time the only way to obtain this information was by cardiac catheterization, an invasive procedure especially risky for those who recently had heart attacks. Dynamic blood pool imaging proved to be faster, safer and more accurate. Additionally, the radioactive label remained in the bloodstream for several hours, allowing other tests to be conducted.



Robert Parkey was an early advocate of hiring and promoting women. Above, women faculty members pay tribute by brandishing his trademark cigar. Clockwise, from far left, are Nancy Rollins, Gina Cho Sims, Robin Novakovic, Lori Watumull, Ann Mootz, Zerrin Yetkin, Kristen Bishop, Elizabeth Lagomarsino, Devri Weakley, Dianne Mendelsohn, Dana Mathews and Diane Twickler. Center, from left, are Julie Champine, Cecelia Brewington and Mary Ann Mullican.

As department chair, Parkey recruited and retained talented faculty, fellows, residents, technologists, and staff. His power of persuasion was evident in the successful negotiations he conducted for equipment and grants. Often credited with having the foresight to understand MRI's potential importance, Parkey strongly advocated bringing a clinical unit to UT Southwestern.

"Historically the department always had generous support from grants and donors," Parkey said. "But radiologists are always facing the challenge of getting the latest technology and it's the radiologist who has to inspire others to also want the latest technology."

Parkey always campaigned for the things he believed in, especially his faculty. Those who became directors in his department usually received a copy of John Whitney's *"The Trust Factor,"* a book about how success is adversely affected by mistrust between managers and employees.

"I judge people by whether they're a good human being," Parkey said. "If they're a good human being, then everything else falls into place. If not, you have to let them go. No one can afford to be tied up by bad folks who burn valuable energy."

"I JUDGE PEOPLE by whether they're a good human being."

— Robert Parkey

Despite increasing responsibilities as chairman, Parkey continued teaching. He received top teaching honors from UT Southwestern students several times, something he considered a great honor.

Parkey was also proud that the Department of Radiology was recognized as an employer of the year, in 1989, by The Arc of the United States, a nonprofit organization dedicated to improving the quality of life for people with intellectual and developmental disabilities.

From 1994 to 2010, Parkey held the Effie and Wofford Cain Distinguished Chair in Diagnostic Imaging. In 2007, Parkland hospital honored him with its Hero of Our Heritage Award.





"The people who work at Parkland are dedicated to helping the underserved," Parkey said. "My goal was to always make sure the hospital had the best possible radiology diagnostics available. You go to Parkland and you'll get the same quality of medicine from faculty and staff as you would at the other hospitals. If you've worked at Parkland, it's in your blood."

Throughout his tenure as chair, Parkey had a front row seat as both medical imaging and UT Southwestern experienced unprecedented growth. In terms of medical imaging, magnetic resonance technology advanced from the first full body scan of a human in 1977 to highly detailed brain mapping. As for UT Southwestern, the Biomedical Magnetic Resonance Center, the Mary Nell and Ralph B. Rogers Magnetic Resonance Center, Zale Lipshy University Hospital, and the Bill and Rita Clements Advanced Medical Imaging Building were all constructed during his more than 30 years as department chair.

Parkey's retirement in 2010 coincided with his being presented a Lifetime Service Award from the American Board of Radiology, followed by a 2012 Gold Medal from the Texas Radiological Society. Yet he considered his greatest accomplishment the many students and residents he trained through the years.

At the time of the Department of Radiology's 60th anniversary, Parkey celebrated his 40-year association with the department along with his wife, Nancy, their three children and grandchildren.



PROFILES *in* TEAMWORK

Radiologic technologist Chris Holmes is one of many UT Southwestern employees who support the clinical, educational and research missions of the Department of Radiology.

IT TAKES A TEAM

THROUGH THE YEARS, the Department of Radiology relied on the exceptional work of its staff, which included nurses, physician assistants, technologists, administrative support personnel, laboratory technicians, postdoctoral researchers, accountants, analysts, schedulers, creative professionals, research study coordinators and data specialists, and more. Their ability to work as a team, constantly back each other up, pitch in to help out on larger projects and initiatives, and support the faculty in its clinical, educational and research endeavors helped build the department.

At the time of the department's 60th anniversary, more than 100 staff provided the support structure necessary to deliver professional radiology services to three major hospital systems: UT Southwestern's Hospitals and Clinics, Children's Health, and Parkland Health & Hospital System.

The following pages contain a sampling of the many dedicated professionals who served in the department, some for many decades. A distinguishing factor for these staff members was that they all shared a direct link to the longest-serving chair, Robert Parkey.

"I have watched support staff throughout the radiology department work together as a team to transform the culture through standardization, best practices, and quality initiatives, while also working every day to improve communication," said Dan Crawley, MBA, a radiologic technologist who became the department's administrative director in 2012. "As we focus on recruiting, training and retaining top talent, we continue to rely on our staff to be true collaborators in education, research and clinical care.

"The radiology staff is the foundation of this great department," Crawley added. "They will not only help to sustain the department but also continue to bring positive change and growth."

DINAH BARRILLEAUX

"IT WAS an exciting time and I was attracted to the department's reputation of being a big family."

— Dinah Barrilleaux



IN 1999, DINAH BARRILLEAUX became part of the radiology department at UT Southwestern Medical Center. A graduate of the University of Texas at Arlington and Northwood University, Barrilleaux assumed the role of administrative manager of business operations.

The department was then embarking on expansive growth, which included the medical center's acquisition of St. Paul Hospital and construction of the Bill and Rita Clements Advanced Medical Imaging Building.

"It was an exciting time and I was attracted to the department's reputation of being a big family," Barrilleaux said. "Dr. Parkey strengthened that philosophy with his generous personality and I experienced it firsthand when I received a breast cancer diagnosis. The department was incredibly supportive during both my treatment and recovery. I will always be grateful for the kindness shown by Dr. Parkey and my colleagues."

One of Barrilleaux's favorite memories involved Jack Reynolds, M.D., whose office had been located across the hall from hers. Reynolds was known for taking walks and picking up pieces of "junk" that would actually become materials in art sculptures he created. Following his death, Barrilleaux received one as a gift, which she greatly cherishes.

At the time of the department's 60th anniversary, Barrilleaux remained exceptionally busy, ensuring smooth operations for a department of more than 300 UT Southwestern employees. In addition to her duties in radiology, Barrilleaux was elected by her peers to serve an inaugural term on the newly formed Employee Advisory Council. Started in 2010, the council sought to enhance communication, promote employee commitment, build community, and improve medical center operations. She was also a member of the Executive Women in Texas Government.

CURTIS CHANEY

CURTIS CHANEY made thousands upon thousands of images at UT Southwestern, first as a technologist and then as a research assistant. In discussing his nearly 40-year career, two unusual imaging tests he was involved with came to mind.

The first was of the prehistoric woman “Lee Ann,” believed to have died 10,000 years ago; the second was of the fossilized remains of a 90-million-year-old shark in shale rock.

“The X-rays we did showed a spine and shark teeth in two pieces of the shale, which came from a creek near Coppell,” Chaney said. “It was quite different pinpointing bone surrounded by shale, instead of soft tissue, but it worked and the folks from the Dallas Museum of Natural History knew exactly where to chip out the fossil.”

As a young man, Chaney’s first job was in the Department of Internal Medicine. In 1974, Robert Berk, M.D., the Department of Radiology’s second chair, recruited him as a radiology technician. It was a decision he’s grateful to have made, especially when discussing Robert Parkey, M.D., who became the Department of Radiology’s third chair following Berk’s departure.

“Looking back, I wouldn’t change anything now,” he said, with a chuckle. “Dr. Parkey has a way of inspiring you to do things you didn’t think you could. I worked hard because of my respect for him and he treated everyone throughout the department equally. I was really fortunate to have worked with so many great people.”

Chaney added his years at UT Southwestern flew by. At the time of the department’s 60th anniversary, he was enjoying retirement with his wife, children and grandchildren.



Curtis Chaney (left) works beside Philip Lesh.

“DR. PARKEY has a way of inspiring you to do things you didn’t think you could.”
— Curtis Chaney



M A D E L I N E (D O L L Y) C H R I S T E N S E N

"THE POSITION

allowed me to connect
with people from all
over the country and
world when they
were applying for
visiting fellowships."

— Dolly Christensen



Juanalyne Williams (left), former administrative manager and executive assistant to Robert Parkey, and Dolly Christensen.

WHEN MADELINE (DOLLY) AUSTIN met her future husband Edward Christensen, M.D., at the University of Wisconsin in Madison, she had no idea their story would bring them to Dallas. He would go on to earn his medical degree and complete residency training at Temple University Hospital in Philadelphia. He then joined the Air Force for five years, which took him and Dolly to Puerto Rico, where they began to raise their family.

The couple relocated to Dallas in 1965 when he accepted a faculty position in the radiology department at UT Southwestern Medical Center. For the next fifteen years, she kept busy raising their four children, supporting her husband and being active in the Faculty Wives organization. Then, in 1980, Edward Christensen died suddenly at this home. He was 51 years old.

Shortly afterward, Robert Parkey found he needed to hire a director of postgraduate education and visiting fellowships. Dolly Christensen was right for the job.

"My degree from the University of Wisconsin was in teaching and I have always loved

interacting with different people," she said. "The position allowed me to connect with people from all over the country and world when they were applying for visiting fellowships. With postgraduate education, I remember Jeff Weinreb and I were once able to convince Dr. Sprague to let us plan a meeting outside of Texas. We chose Jamaica."

She retired in 2009 after nearly 30 years with the medical center. Reflecting on her time at UT Southwestern, she was grateful her family's history would always be closely associated with the Department of Radiology.

IRMA DOBBINS

AT THE TIME IRMA DOBBINS started her career at UT Southwestern, she didn't even have an office chair, let alone an office. When she retired in 2009, after 37 years of service, her office was filled with mementos reflecting a rich career and personal life.

A biology graduate of Texas Southern University in Houston, Dobbins started as a research technician in the radiology department under future chairman Robert Parkey. Several years later, she was recruited to help reorganize and restructure the medical center's radiation safety program.

"I didn't want to leave the department, so I asked Dr. Christensen to promise once the safety program was on track that they'd bring me back," she said. "The first Radiation Safety Handbook was published in 1979, and if you look closely you'll find my name in the cover design."

Dobbins returned to the department as a data coordinator for the Multicenter Investigation of Limitation of Infarct Size program under Parkey and James Willerson, acting as a liaison between the medical center and other clinical and basic science research departments across the country.

In her later career, Dobbins became an senior administrative associate for the Advanced Radiological Sciences Division and the Graduate Program in Radiological Sciences. She also managed the Radiology Grants Resource Office and assisted Dianna Otterstad in the Education Division.

"Throughout my career I had the opportunity to meet individuals from different parts of the country and the world," she said. "Meeting new people is what I enjoyed the most and I still hear from students who graduated from UT Southwestern. It's been a wonderful experience to have worked with so many great people."



"MEETING NEW PEOPLE

is what I enjoyed the most and I still hear from students who graduated from UT Southwestern."

— Irma Dobbins

DOROTHY SMITH

IN 1973, DOROTHY SMITH started her career at UT Southwestern as a research technician and photographer. A biology graduate of Spalding University in Louisville, Kentucky, one of her first big projects was assisting Frederick Bonte and Robert Parkey with their research on viewing and imaging myocardial infarction.

Smith remembered those early days at the medical center well; particularly one incident when Edward Christensen gave her career advice that remained with her for 40 years.

"I was having a very difficult day, everything was going wrong with the research," Smith said. "Dr. Christensen saw me in the hallway and could tell I was flustered and frustrated. We talked, and I clearly remember him saying, 'I find the solution to having a bad attitude towards work is to work harder.' And I did."

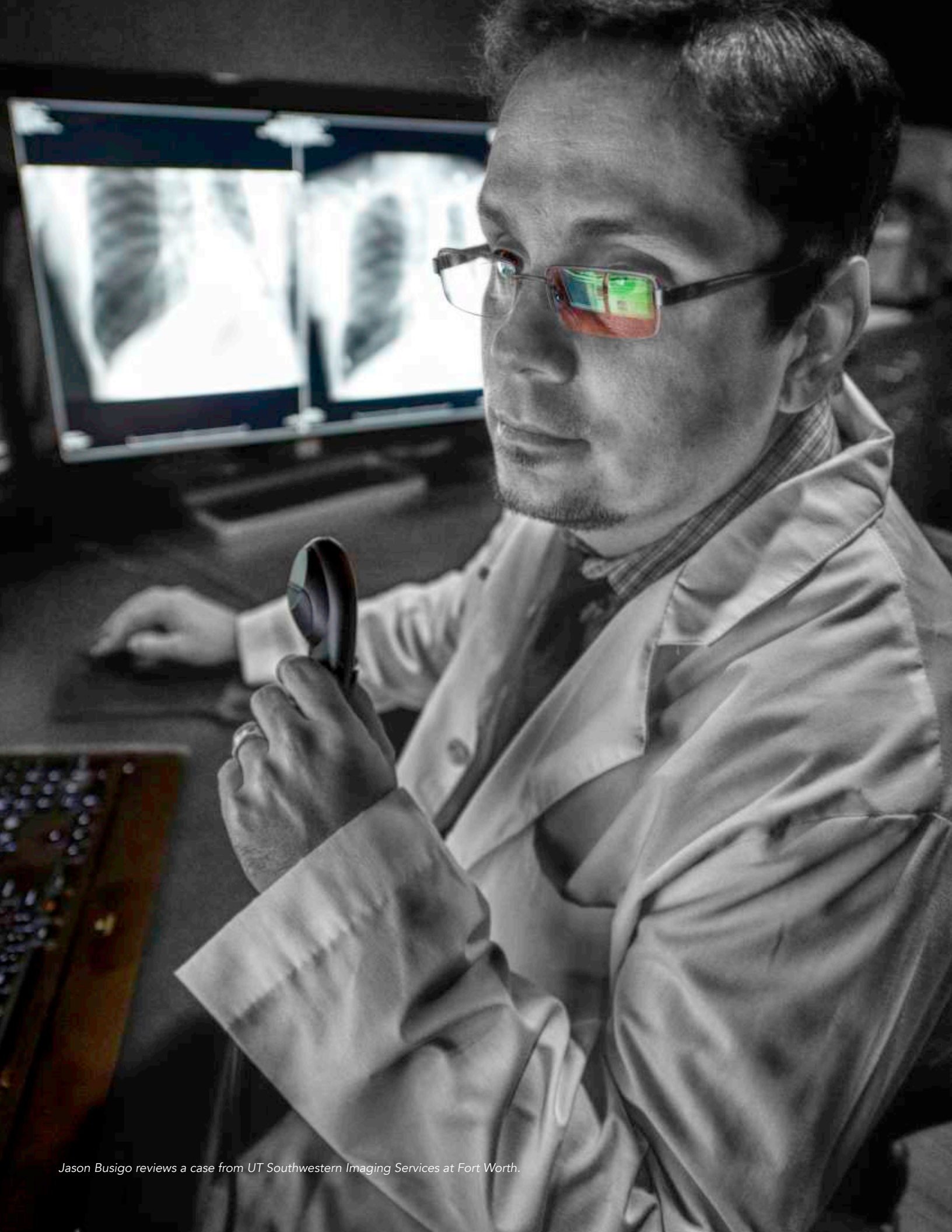
Later in her career, Smith looked after the department's unofficial lab "mascot," a guinea pig named Molly Brown. By then, she was responsible for the research labs and illustration services. She personally touched untold numbers of medical and scientific conference posters, clinical papers, books, and other materials produced by the department's faculty members.

"I grew up with a lot of the folks in the department and we shared our happiest and saddest moments through the years," she said. "There was always support for each other and we got done what needed to be done, no matter the challenges."

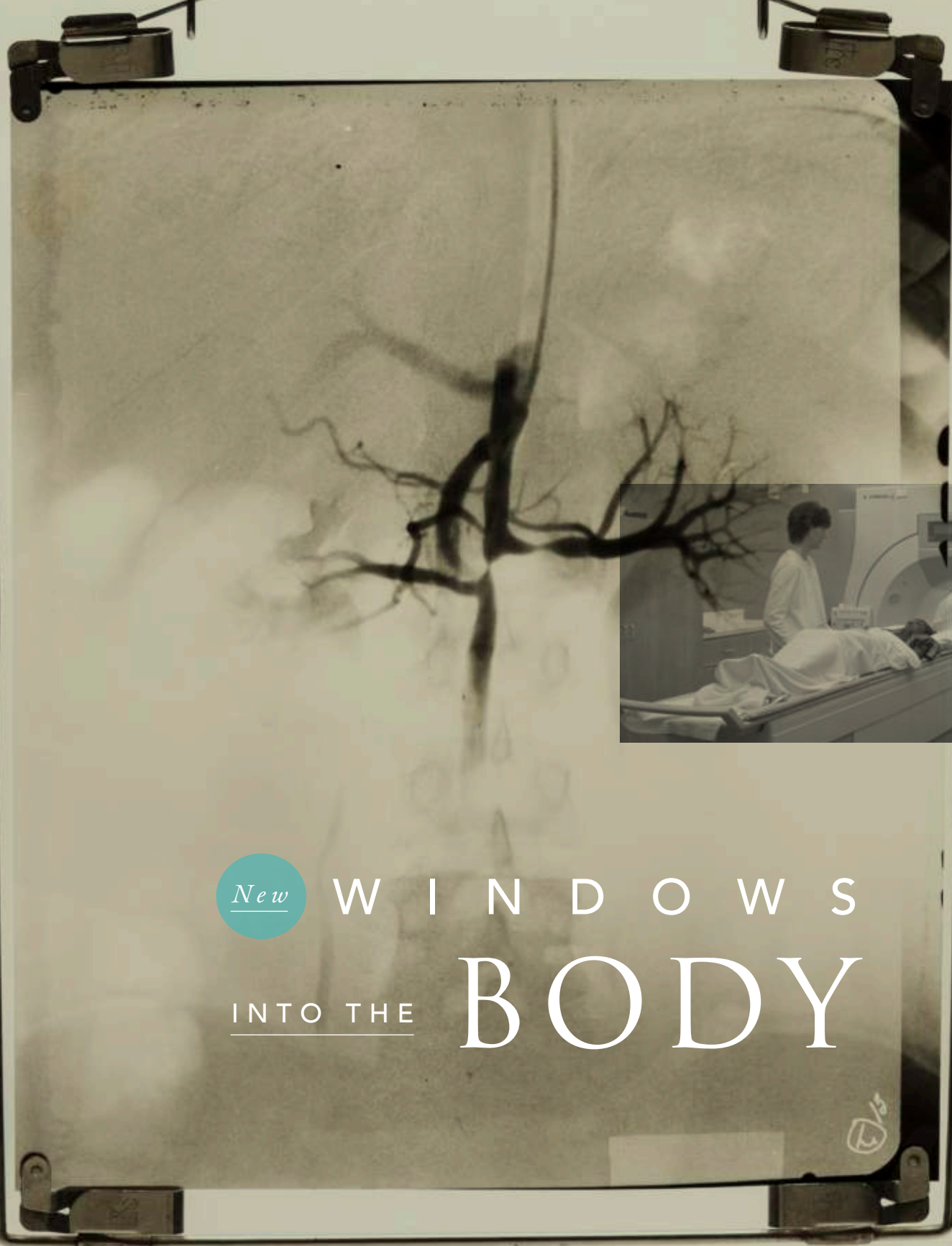
Following her departure from UT Southwestern in 2008, Smith became a consultant for Close to My Heart, a scrapbooking and stamping company. She joked that all the years assembling medical posters provided perfect training.

"THERE WAS always support for each other and we got done what needed to be done, no matter the challenges."
— Dorothy Smith





Jason Busigo reviews a case from UT Southwestern Imaging Services at Fort Worth.



New

W I N D O W S

INTO THE

BODY

CHAPTER 6

IN 1986, UT Southwestern Medical School reached a milestone in its history when Ervin Addy, M.D., became the school's first graduate to reach retirement age.

"It never occurred to me that the medical school would reach such heights,"

Addy said in a *Center Times* article marking the occasion. "It truly has come to the forefront of attention as one of the significant medical schools in the country."

That same year, Kern Wildenthal became UT Southwestern's second president. The institution's annual budget was \$185 million; with research grants totaling \$55 million, clinical earnings approaching \$30 million, and total space extending to 1.8 million square feet. The Howard Hughes Medical Institute opened a research facility on the campus, concentrating on molecular biology. Completion of the facility would lead to the establishment an X-ray crystallography laboratory.

Additionally, the new James W. Aston Ambulatory Care Center began providing a range of diagnostic and therapeutic radiologic services, including computed tomography (CT) scans, magnetic resonance imaging (MRI), and low-dose radiation and Xerography for procedures such as mammograms.



hhmi
Howard Hughes
Medical Institute

1985

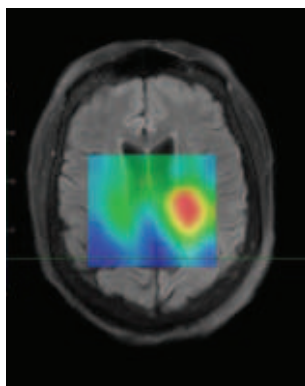
The Howard Hughes Medical Institute selects UT Southwestern as the site of one of its largest research centers.

1985

The James W. Aston Ambulatory Care Center begins providing diagnostic and therapeutic radiologic services.

1986

Kern Wildenthal is appointed second president of UT Southwestern Medical Center.



MR spectroscopy

Researchers continued investigating how powerful magnets could monitor certain aspects of human body metabolism. Magnetic resonance spectroscopy (MRS) allowed UT Southwestern doctors to analyze patients who had experienced a stroke and lost their ability to speak; perform intricate baseline studies on the beating hearts of normal individuals; better detect tumor response to radiation therapy when treatments were combined with injections of the artificial blood substitute fluosol; and monitor babies who had experienced oxygen deficiency at birth. MRS also was used to describe certain childhood metabolic disorders, such as rickets.

“We have a window on the biochemistry of the body that we never had before because the technology hadn’t existed before,” said Ray Nunnally, then director of the Biomedical Magnetic Resonance Center where the research took place.

“WE HAVE A WINDOW on the biochemistry of the body that we never had before because the technology hadn’t existed before.”

— Ray Nunnally



MRI was also having an impact on diagnosing and treating cancer. David Ranney, M.D., a pathologist at UT Southwestern, collaborated with a team of radiology researchers, including Peter Antich, Ph.D., Padmakar Kulkarni, Ph.D., William Erdman, M.D., Jesse Cohen, M.D., and Jeffrey Weinreb to devise a new strategy for locating and monitoring hidden tumors. The method improved upon existing technology by generating high-quality images that could locate tumors with a mass about the size of a pinhead — 100 times smaller than those detected by previous techniques.



Peter Antich

The researchers injected laboratory animals with a special dye that is detectable by MRI scanners. The polymer remains in the bloodstream except around tumors, which have leaky, porous blood vessels. When the dye reaches the tumor, it seeps through the blood vessels and is revealed by the scanner. After tumor tissue dies, its blood vessels become even more porous and ooze more dye, appearing even brighter on the scanner.

"Our report is the first to document that an MRI contrast agent can be used to monitor tumor responses to drugs," Ranney said at the time. "Indeed, it is the only method at present that can quantify acute drug and radiation effects on tumors in the body at submillimeter resolution. It has the potential to contribute to earlier detection and improved clinical management of human breast, lung, colon and prostate cancers, as well as other solid tumors which metastasize to liver, lung and brain."



Erdman remembered coming to UT Southwestern specifically to pursue MR. The New York native was unaware of UT Southwestern before applying for a fellowship in the radiology department.

"Back then, few places were doing anything with MR and hardly anyone was using it on a regular clinical basis," he said. "I came down to interview and was blown away by the size of the place. Then I realized Fred Bonte is here. The Curry brothers are here. Helen Redman is here. Bob Parkey is here. I was like, 'Holy Mackerel! This is the place to

"I CAME DOWN TO INTERVIEW

and was blown away by the size of the place. Then I realized Fred Bonte is here. The Curry brothers are here. Helen Redman is here. Bob Parkey is here. I was like, 'Holy Mackerel! This is the place to be.'

— William Erdman

be.' And Jeff Weinreb became a great mentor."

Because there were no positions available in MR at the time, Erdman took over the nuclear medicine division after completing his fellowship. He also became director of the nuclear medicine residency program. Regarding teaching, he credited Parkey, Jack Reynolds, William Kilman and George Curry as exemplary role models.

"When I started lecturing to students, I frankly wasn't very good," Erdman said. "So I started going to my colleagues' lectures and took notes on how they were teaching. Dr. Reynolds in particular was phenomenal and he took me under his wing. When he retired he gave me his course materials. It took several years to develop my own style, but with time I hit my stride and was even recognized with teaching awards."

Weinreb left Texas in 1986 to accept an appointment at the Columbia University College for Physicians and Surgeons in New York. He then went on to New York University Medical Center, where he became chief of MR and a mentor for the radiologist who would become the fourth chair of UT Southwestern's radiology department, Neil M. Rofsky, M.D.

In neuroradiology Phil Purdy, M.D., took over the division from Kenneth Maravilla, M.D., who moved to the University of Washington in Seattle. A Missouri native, Purdy first came to UT Southwestern in 1979 for a three-year residency program in neurology, and stayed for a three-year residency in radiology. He went on to become a professor of both radiology and neurological surgery at UT Southwestern, as well as vice chair of finance and clinical operations.

Purdy invented several devices — UT Southwestern holds the patents — that have increased the success with which physicians slip a spaghetti-thin catheter into a patient's groin and thread it to the brain, enabling drugs to be injected to dissolve blood clots, plug vessels and treat other abnormalities — without the more traditional and more invasive neurosurgery.

As state support of higher education plateaued in the mid-1980s, philanthropic gifts became essential to ensuring the institution's continued growth and development. Between 1987 and 1996, the school received donations of \$25 million or more from the Harold C. Simmons Foundation, the Perot Foundation, the Excellence in Education Foundation, as well as individual donors, such as Nancy B. Hamon, and Sarah M. and Charles E. Seay.



Phil Purdy uses a microcoil — a device he developed — to treat an aneurysm.



1987

*The medical center is
renamed The University of
Texas Southwestern Medical
Center at Dallas.*

In 1987 the medical center was renamed The University of Texas Southwestern Medical Center at Dallas.

That same year, Nancy Rollins, M.D., returned to Dallas after completing fellowship training in interventional radiology and angiography at the University of Texas MD Anderson Cancer Center in Houston. At UT Southwestern, she completed a second fellowship program, in pediatric radiology, under the mentorship of Guido Currarino. She then stayed at Children's Medical Center, becoming the youngest director of a pediatric radiology division in the nation and holder of the Charles Cameron Sprague, M.D., Chair in Medical Science.

"When Guido retired, I chose Nancy to be his successor," Parkey said. "I caught hell for that decision, but within six months all the pediatricians were begging me to do whatever I could to keep her. Everyone across the country wanted her. Children's quickly understood how valuable she was and gave her all the resources needed to make that division one of the best in the country."

Rollins was equally complimentary of Parkey.

"Dr. Parkey was a wonderful chair and always had my back," she said. "He was very supportive of women. When we were going to buy the new MRI for pediatrics, one of the contenders was Toshiba. The representatives came to Children's and all the questions they had were directed to Dr. Parkey. They weren't really caring what I had to say. Then Dr. Parkey tells them, 'You need to understand, Dr. Rollins is the one making the decision on which vendor we're going to buy from.' All 12 Japanese men turned to face me and bowed."

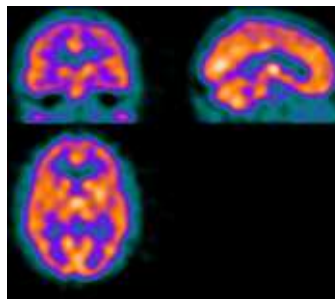
Rollins' areas of expertise and specialization involved pediatric vascular and neuroendovascular interventional radiology, including non-invasive treatment of complex

intracranial and extracranial vascular malformations, stroke, dural venous sinus thrombosis, and complications of solid organ transplants. Her areas of clinical expertise involved advanced MR imaging in neuroimaging with a focus on white matter maturation and connectivity in normal and diseased states affecting children.

A year after Rollins' return, UT Southwestern celebrated both its 45th anniversary and a third Nobel Prize. Johann Deisenhofer, Ph.D., received the award for chemistry in 1988 in recognition of his work identifying the three-dimensional structure of a large membrane-bound protein molecule.

At Parkland hospital, the world's first single-photon emission computed-tomography (SPECT) system was acquired for three-dimensional imaging of blood flow or metabolism in the human brain or heart. The unit was co-developed by UT Southwestern faculty in the Nuclear Medicine Center in collaboration with Ohio Imaging, and was the only clinical device at the time capable of delivering image resolution similar to positron emission tomography (PET).

By the end of the decade, UT Southwestern was ranked as one of the top 15 medical schools in the nation, and research had increased more than 20 percent a year since 1984. Continued expansion would be essential to sustaining momentum. Recognizing this need, the John D. and Catherine T. MacArthur Foundation gave 30



A SPECT image of blood flow in the brain.

1988

UT Southwestern and Parkland Memorial Hospital receive the world's first ultra-high resolution single-photon tomograph for three-dimensional imaging of blood flow or metabolism in human brain or heart.



1988

Johann Deisenhofer receives the Nobel Prize in Chemistry for his work identifying the three-dimensional structure of a large membrane-bound protein molecule.



Johann Deisenhofer



1988

UT Southwestern receives a major gift of land from the John D. and Catherine T. MacArthur Foundation to begin a new north campus expansion.

Architect's plan for the Mary Nell and Ralph B. Rogers Magnetic Resonance Center.

acres of land to begin what was to become the north campus.

A master plan for the site was developed that included 13 major buildings, with construction of the first starting in 1988. Groundbreaking for the Mary Nell and Ralph B. Rogers Magnetic Resonance Center took place on November 2.

"The initiation of UT Southwestern's expansion on our new North Campus comes at a propitious time

— just as we have had our third Nobel Prize winner in three years," Wildenthal said. "Our research activities are growing rapidly in size and in quality, and it is vital that we construct new facilities for our major programs, such as magnetic resonance."

The \$4.8-million Magnetic Resonance Center would house the three powerful magnets stationed at the Record Crossing location. In total, the one-story center would become home to six research magnet units and one clinical magnet.

Wildenthal paid tribute to Ralph Rogers' vision and vigor in championing state-of-the-art MR research programs at the building's groundbreaking.

"Ralph is one of the people who raised our sights from seeing 'big' as limited to Dallas to seeing 'big' as meaning the whole world," Wildenthal said.

Chronicling the history of the MR effort at the Dallas campus in 1988, Parkey reported that more than 10,000 clinical MR exams had been performed at UT Southwestern since



From left, Mary Nell Rogers, Ralph B. Rogers, Bill Neaves and Annette Strauss participate in groundbreaking ceremonies for the Mary Nell and Ralph B. Rogers Magnetic Resonance Center.

1988

Construction begins on the Mary Nell and Ralph B. Rogers Magnetic Resonance Center.

1983. He predicted the number of such diagnostic exams administered nationwide would soar.

"Over 90 percent of the techniques we'll be using in medicine 10 years from now are just offstage, waiting in the wings, waiting to be discovered," he said in a *Center Times* article. "We hope to develop our fair share of these at the Mary Nell and Ralph Rogers MR Center."



Floor plan for the Mary Nell and Ralph B. Rogers Magnetic Resonance Center.



PROFILES *in* LEADERSHIP

HELEN REDMAN, M.D.

PIONEER IN THE FIELD of vascular and interventional radiology, Helen Redman was born in Newton, Massachusetts. After graduating in 1957 with a bachelor's degree in biology from the University of Rochester in Rochester, New York, she received a medical degree at Columbia University College of Physicians and Surgeons in New York.

Redman completed her internship and radiology residency training at Palo Alto-Stanford Hospital in Palo Alto, California. She was the first woman resident to train under Herbert L. Abrams, M.D., and also served as chief resident. Redman received a James Picker Fellowship in Radiologic Research, which enabled her to study under Olle Olsson, M.D., at the Roentgen Institute in Lund, Sweden.

She worked at the University of Pittsburgh and the University of Michigan, before returning to California. In 1983, she was at the University of California–San Francisco when Robert Parkey recruited her to join the UT Southwestern radiology faculty.

Redman became chief of vascular and interventional radiology and vice chair for academic affairs. At Parkland hospital, she served as chief of special procedures and body imaging and chief of genitourinary radiology.

“HELEN WAS AN ABSOLUTE BEST-OF-CLASS as an angiographer.

But more importantly, she was a master teacher and mentor. She brought an unparalleled level of class and competence to the university and hospital.”

— Robert Parkey



Helen Redman, 1995

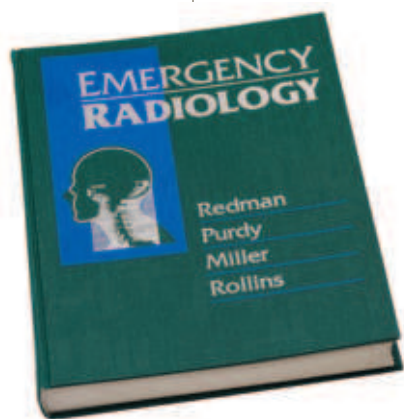
"Helen was an absolute best-of-class as an angiographer," Parkey said. "But more importantly, she was a master teacher and mentor. She brought an unparalleled level of class and competence to the university and hospital."

Redman published extensively and co-authored *Gastrointestinal Radiology*, which became required reading for a generation of radiologists. She also served on the editorial boards of the *American Journal of Roentgenology*, *Radiology*, and the *Journal of Vascular and Interventional Radiology*.

She was a fellow of the American College of Radiology and served on its board of chancellors. Redman was also a trustee of the American Board of Radiology. She served as the first woman president for both the Radiological Society of North America (RSNA) and the Texas Radiological Society (TRS).

In 1997, *Diagnostic Imaging* magazine named her one of the "20 Most Influential People in Radiology."

"Redman's political achievements should not detract from her status as respected physician, researcher and mentor in the field of interventional radiology — an area where lines for the women's room are particularly short,"



One of the many books authored or co-authored by Helen Redman

the editors wrote. “And if any young women radiologists do aspire to break gender barriers in any aspect of radiology, Redman’s example will encourage them to pursue their goals.”

“REDMAN’S POLITICAL ACHIEVEMENTS should not detract from her status as respected physician, researcher and mentor in the field of interventional radiology – an area where lines for the women’s room are particularly short. And if any young women radiologists do aspire to break gender barriers in any aspect of radiology, Redman’s example will encourage them to pursue their goals.”

— Diagnostic Imaging Editors

Redman was a founding member of the American Association of Women Radiologists, which bestowed upon her its highest honor, the Marie Curie Award, in 1999. Additionally, she was the inaugural holder of the *Dr. Fred Bonte Professorship in Radiology*.

After receiving a cancer diagnosis, Redman underwent treatment at Zale Lipshy University Hospital. While there, she received gold medals from three separate medical societies: the RSNA, the Society of Cardiovascular & Interventional Radiology, and the TRS. Redman famously quipped that she felt like Mark Spitz, the Olympic champion swimmer who won nine gold medals. Redman, who was married to Marten Klop, died in 2000.

An early architectural rendering of Zale Lipshy University Hospital.

BUILDING SUCCESS

on

CHAPTER 7

IN THE EARLY 1980s, university administrators began taking steps to meet a critical unmet need: constructing a private referral hospital. At the time, the medical school was the only one in the nation without a private referral facility of its own.

With support from the Zale Foundation and several other foundations and individuals, UT Southwestern opened Zale Lipshy University Hospital in 1989. The private, nonprofit facility would become one of the world's leading neurological diagnostic and treatment centers.

Ann Mootz, M.D., was Zale Lipshy's first medical director of radiology. A 1981 graduate of UT Southwestern (who also received her residency and fellowship training at the medical center), Mootz credited Robert Parkey with being ahead of the times when it came to hiring women.

"When I came out of training, it was common knowledge the head of radiology at a large Dallas practice wouldn't even interview women," Mootz said. "There were no women there, no women at a lot of places. The fact he was willing to hire a lot of us made a huge difference in my life and many others."

Mootz left UT Southwestern for several years, serving on the Medical Advisory Board for Susan G. Komen Foundation. She eventually returned to the medical center, where, at the time of this publication, she was a clinical associate professor of radiology and practicing in the Breast Imaging Division under the leadership of Phil Evans, M.D., who had also served as a Komen advisor and president of the American Cancer Society.



1989

*Zale Lipshy University
Hospital opens.*



Ann Mootz's treasures include a textbook that was co-authored by Frederick Bonte.

"An immeasurable strength of this department has been one generation passing its knowledge on to the next and then to the next after them," Mootz said. "One of my cherished possessions is a textbook Dr. Frederick Bonte gave me about trauma and the chest that he had coauthored in the 1960s."

After Mootz's departure, Parkey recruited Mary Ann Mullican to take over imaging at Zale Lipshy.

"When I was a resident we basically had general radiology with plain films, fluoroscopy and nuclear medicine," Mullican said. "There was no ultrasound, CT or MRI. Endoscopies were much less common than they are today. If you found something, you had to be very sure about it because you were often committing a patient to open surgery. Now there are so many ways to do things less invasively."

Zale Lipshy's neuroangiography suite became a renowned high-tech exam room. Led by Phil Purdy, the suite was the first in the nation to utilize biplane fluoroscopy and biplane digital angiography. Purdy often used angiography to prepare patients for surgery when they had blood vessels in danger of rupturing and bleeding uncontrollably in the operating room. Part of the hospital's national reputation in neurosurgical vascular disorders was built on Purdy's unique ability to provide primary treatment for some whose life-threatening



Ron Peshock

disorders made surgery impossible.

The same year Zale Lipshy opened, Ron Peshock and James Fleckenstein, M.D., then assistant professors of radiology, discovered that injured muscles continue to "light up" on MRI scans for three weeks after athletes no longer experience pain.



The neuroangiography suite at Zale Lipshy University Hospital in 1990.

"Abnormalities revealed by MRI are evidence that clinical evaluation alone, without MR imaging to verify the location and extent of injury, may lead to an incomplete assessment of muscle damage and recovery," Fleckenstein said in a press release. "More research needs to be done to determine if the bright signal that remains means that the muscle needs more healing time before it is safe to reuse the muscle."

The investigators used MR imaging techniques to evaluate painful muscle strains and delayed-onset muscle soreness. In cross-sectional MR images obtained while athletes were experiencing muscle pain, the researchers found that primary muscles used in exercise were not necessarily the ones that remained bright later on. Often the bright areas, from which pain emanated, were in adjacent muscles.



An MRI study showing an injured leg muscle "lighting up" well after pain has ended.

1991

*The Algur H. Meadows
Diagnostic Imaging
Center opens.*



Also in 1989, The Meadows Foundation of Dallas awarded UT Southwestern \$1.5 million to complete funding for construction of an advanced inpatient imaging center. The Algur H. Meadows Diagnostic Imaging Center, adjacent to the Charles C. Sprague Clinical Science Building, served patients at both Zale

Lipshy and Parkland hospitals. The university and its hospitals, as well as Parkland, shared additional funding or in-kind resources for the center.

At its opening, university president Kern Wildenthal commented on the center's importance for the hospitals' patients.

"The shared Meadows Diagnostic Imaging Center will make the most advanced diagnostic MRI technology available to all patients — those at Parkland as well as those referred to UT Southwestern from all over the world," he said. "Given the demands on Parkland's tax-supported budget, it is clear that the center's advanced instruments would not otherwise be available for the benefit of Parkland's patients. Moreover the small size of University Hospital would not justify the purchase of these instruments for those patients alone. Thus, a shared facility is essential to bring the best technology to the benefit of the patients from both institutions."

The building contained four bays for housing MRI units. Additional space was devoted to viewing rooms, classrooms, patient exam rooms and administrative areas. Initially two devices were installed at the center — including a fast-speed cardiac MRI unit. A magnet for the center (to measure metabolic processes as well as images of anatomical structures) was purchased as part of an imaging equipment package that included a computerized axial tomography scanner, a gastroenterology X-ray suite, an ultrasound suite, and the Zale Lipshy neuroangiography suite.

In 1992, the medical center acquired an MRI device equipped with high-performance coils that enabled images to be made 10 to 20 times faster than conventional MRI machines. UT Southwestern radiologists had partnered with the device's manufacturer to explore potential clinical applications. Patient testing was conducted at Meadows. Additionally, engineers at The University of Texas at Arlington began a collaboration to develop computer software and hardware for compiling the device's high-speed signals into images.

The following year, the Department of Radiology marked 10 years since the first MRI scan was performed at Record Crossing. "In only a decade we saw a technology existing in a few places become a routine part of medical care across the country," Peshock said. More than 15,000 people had been imaged at the Rogers Center since it opened in 1990.

Ultrasound was also making waves. Peter Antich developed a scanning device to measure bone strength and elasticity. Based on ultrasound, the scanner gave further evidence of the therapeutic value of slow-release sodium fluoride with calcium citrate — an osteoporosis drug developed by Charles Pak, M.D., chief of mineral metabolism. Before Antich's device, assessment of bone strength could only be achieved by applying force to determine how much damage occurred.

"The most important aspect of osteoporosis treatment is to provide sufficient bone strength,



1993

UT Southwestern's Department of Radiology marks the 10th anniversary of the first MRI scan performed at the Record Crossing site. Above, an MRI of an injured knee, circa 1983.



A student watches as Peter Antich adjusts the high-resolution imaging device designed by Antich and his collaborators.

not merely to increase mineral density,” Antich explained. “We want to know how resilient or elastic the new bone is, how well it is mineralized and how strongly it is bound in several directions. Since some bone is connected better structurally than other we want to know whether the bone being formed is just more weak bone or strong, good bone”

The vibration of the ultrasound signal was used to “stress” the bone, allowing its elastic properties to be measured as sound waves bounced off fibrous structures. The elasticity was then depicted as a line graph on a video screen. The research was conducted at the General Clinical Research Center, which was funded by the National Institutes of Health.

Antich also led a collaborative effort to produce a new tomographic imaging device developed by UT Southwestern and University of Dallas researchers. The device performed two types of functional nuclear imaging: Single-photon emission computed tomography (SPECT) and positron emission tomography (PET). Both could be used in different ways to enhance scientists’ understanding of diseases.

“Not only is the resolution better, but this new technology uses isotopes that are not only less costly and more readily available, but also permit a greater range of applications,” Parkey said in a Center Times article.

In addition to Antich, the collaboration involved Parkey and Jon Anderson, Ph.D., a

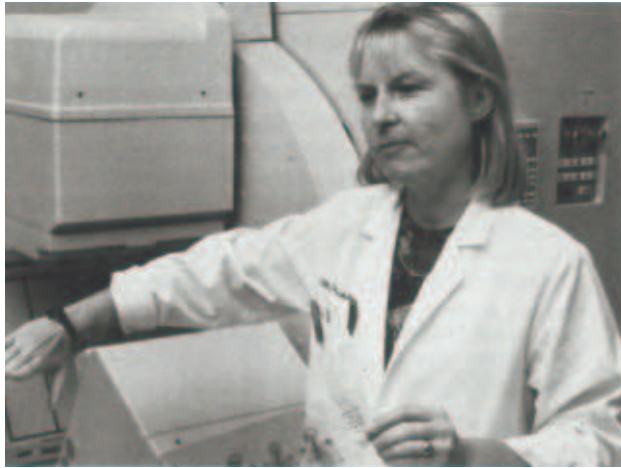
professor of radiology and chief of Medical Physics at the time of this writing.



Jon Anderson in 1994

As a UT Southwestern resident, Dana Mathews wrote a paper describing SPECT scanning as an integral part of any temporary arterial occlusion study. *The Journal of Nuclear Medicine* published the paper, and Mathews, a professor of radiology at the time of this writing, vividly recalled presenting the study at the Society of Nuclear Medicine and Molecular Imaging.

"Dr. Bonte had the idea for a research paper and I jumped on it," she said. "I had to physically get all the films out of storage at Zale and for a long time there were big piles of scans on my desk at Parkland. The paper got accepted and I was invited to give the first presentation of the day at the annual meeting.



Dana Mathews discusses a single-photon emission computerized tomography scanner at Zale Lipshy University Hospital in 1994.

Two days before the talk I came down with some sort of flu. I was on the airplane, wrapped in a blanket with a fever. I kept thinking to myself, 'I have to do this. Dr. Bonte is going to kill me if I can't stand up.' Of course he wouldn't, I was just being silly. Luckily the fever went away, but I was so wiped I wasn't nervous about presenting at all. I was just thrilled to have made it."

Bonte, then director of the Nuclear Medicine Center at UT Southwestern, was also using SPECT as a possible tool for diagnosing Alzheimer's disease. At the time, only biopsies or autopsies of patients' brains were accepted as confirmation of the disease. In a study presented at the Radiological Society of North America's 78th scientific assembly, Bonte and his colleagues revealed brain blood flow imaging correlated almost 100 percent with autopsy verification of the illness. Plans were underway to work with other institutions to study more patients faster.

In a medical center press release, Bonte stressed it was the technique, not the machine, that mattered.



1994

Helen Redman becomes first woman president of the Radiological Society of North America.

"Even primitive equipment in a small hospital can show abnormal brain blood flow patterns if the physicians know how to interpret them," he said.

Two years earlier, Bonte became the inaugural holder of the *Effie and Wofford Cain Distinguished Chair in Diagnostic Imaging*. The Cain Distinguished Chair had also been established to advance UT Southwestern's pioneering work in diagnostic imaging.

In 1994, Bonte also became first holder of the *Dr. Jack Krohmer Professorship in Radiation Physics*, which was created by Bob and Lola Sanford. Bonte began working with Bob Sanford, who was an employee of the Gilbert X-Ray Co., when he became chair of the radiology department in 1956.

"The Sanfords were always friends of the department when the department needed friends," Bonte said. "Long before Bob was president of Gilbert X-Ray, he was encouraging the company to support UT Southwestern. He's the one who persuaded Mr. Gilbert to establish fellowships for graduate students in the radiological sciences."



Jack Krohmer

Krohmer had been one of Bonte's first recruits to the fledgling radiology department and was its first post-doctoral researcher. After leaving the medical center in 1963, he became chief of physics at the Roswell Park Cancer Institute in Buffalo, New York.

Krohmer eventually joined Wayne State University in Detroit, Michigan as a professor of radiology and radiation oncology and as director of its radiation physics programs. He started a graduate program at the school in medical physics, which today is the largest of its kind in the nation. In 1981, he was elected to the American Board of Radiology, the first nonphysician to be a trustee of any certification board sponsored by the American Board of Medical Specialties.

The Sanfords also established the *Dr. Fred Bonte Professorship in Radiology* to honor Bonte. Helen Redman, was its first holder.

"We wanted to put something to work that will be there forever," Sanford said in a news release. "It's the best investment we could make in the future."

Sanford and other medical center supporters had good reason to believe in their investments. Prior to the Sanfords' gift, Alfred Gilman, M.D., Ph.D., then chairman of pharmacology at UT Southwestern, won the 1994 Nobel Prize in Physiology or Medicine for his discovery of G-proteins, a key determinant of how cells receive and communicate signals and respond to external stimuli.

"Southwestern has come to the point it has because of the efforts of a lot of people," Sanford later reflected. "Big things grow from small beginnings. It's been a part of my life, and I'm grateful to have been a part of it. There's something happening there to be winning Nobel prizes and those people are willing to stay when other schools would like to lure them away. We've got a good brand of medicine in Texas, and we want to see it continue."

"THERE'S SOMETHING HAPPENING THERE to be winning Nobel prizes and those people are willing to stay when other schools would like to lure them away. We've got a good brand of medicine in Texas, and we want to see it continue."

— Bob Sanford, who established the Dr. Fred Bonte Professorship in Radiology



1994

*Alfred Gilman receives
a Nobel Prize for his
discovery of G proteins.*



PROFILES *in* LEADERSHIP

THE CURRY BROTHERS

URING THE LATE 1930s, when Tom and George Curry were born in El Paso, the city in far West Texas was about to undergo the same Depression-era population decline that hit every major American city. Like many other middle class citizens, the Curry brothers looked for opportunities beyond their hometown.

Older brother Tom's chance came when he began working nights at the local hospital as an X-ray technician while a student at Texas Western College of the University of Texas (later The University of Texas at El Paso). The experience served him well when he began attending UT Southwestern Medical School.

"As a junior student, I rotated through one of Dr. Reynolds' classes," Curry recalled in an interview for the Texas Radiological Society. "He recognized I could hang up an X-ray film and look at it. We got to talking and he found out I'd been a technician for several years. He and Dr. Bonte invited me to join the department. I was flattered being a young medical student. I didn't apply for residency — residency applied for me."



"HE [DR. REYNOLDS] AND DR. BONTE invited me to join the department.

I was flattered being a young medical student. I didn't apply for residency, residency applied for me."

— Tom Curry



George Curry

Two weeks later, Tom Curry was drafted into the Air Force. He returned to UT Southwestern in 1963 and began his residency training at Parkland hospital, just before a mortally wounded President John F. Kennedy was wheeled into the hospital's emergency room. Tom Curry spent the next several decades as a member of UT Southwestern's radiology faculty.

In 1965, Frederick Bonte encouraged him to learn angiography, so he traveled to California, where he learned to make his own catheters. Every weekend, he'd make enough to last through procedures he would perform during the week ahead.

Perhaps his most important contribution to the field was serving as a co-author of the seminal physics textbook *An Introduction to the Physics of Diagnostic Radiology*.

One of his favorite memories was when the radiology technologists recognized him with "Dr. Tom Curry Day" as tribute to a man who had supported and trained them throughout the years.

ONE OF HIS FAVORITE MEMORIES was when the radiology technologists recognized him with "Dr. Tom Curry Day" as tribute to a man who had supported and trained them throughout the years.

George Curry followed in his brother's footsteps, also attending Texas Western College before heading to UT Southwestern. George Curry was drafted into the

Navy and did not begin his residency training at Parkland until 1965. Afterwards, he completed fellowship training in cardiac radiology at the University of Florida College of Medicine.

George Curry served as director of the diagnostic-radiology residency program at UT Southwestern for many years.

In a separate interview for the Texas Radiological Society, he discussed reviewing films 30 years ago.

“Back then, the unread films would be in a stack,” he said. “You just grabbed a handful of films, take it to the view box, and start reading. Additionally there was no real breakdown into chest or bone or whatever...I think they [residents] became aware of which faculty was interested in which area of radiology so they’d pick that faculty member to review with them. Of course the all-time reviewer was Dr. Jack Reynolds. He knew everything.”

Curry would serve as president of the medical staff at Parkland from 1994 to 1996. Moreover, he played an important role in founding The Association of Program Coordinators in Radiology. He was also first holder of the *M.R. & E. Hudson Foundation Professorship in Radiology, in Honor of Edward E. Christensen, M.D.*



Tom Curry (top) and
George Curry

“OF COURSE THE ALL-TIME REVIEWER [of films] was Dr. Jack Reynolds.

He knew everything.

— George Curry

Top: German physicist Wilhelm Conrad Röntgen.

Below: Diane Twickler examines a most unusual patient — a gorilla from the Dallas zoo.

MILESTONES *and* MEDICAL
MARVELS

CHAPTER 8

TO COMMEMORATE the the 100th anniversary of the X-ray and the development of radiology during that momentous century, a special event was held in Washington, D.C., at the annual meeting of the American Roentgen Ray Society.

Helen Redman, then vice chair of radiology at UT Southwestern, was the first vice president of The Radiology Centennial, Inc. (RCI) committee, which hosted the convocation. Redman also was serving as president of the Radiological Society of North America.

"In the century since German scientist Wilhelm Conrad Röntgen first made his legendary discovery, radiology has grown to become one of the most important fields of medicine," wrote President Bill Clinton. The year: 1995.



Commemorative coin minted to celebrate the centennial of the discovery of the X-ray

"IN THE CENTURY since German scientist Wilhelm Conrad Röntgen first made his legendary discovery, radiology has grown to become one of the most important fields of medicine."

— Bill Clinton

At the same time, the single scanner (there would eventually be six) at the Mary Nell and Ralph B. Rogers Magnetic Resonance Center could no longer keep pace with patient need. The radiology department spent months researching a new MRI and MRS scanner for purchase. A 1.5 tesla system was selected because it was the most versatile and patient-friendly high-field scanner available.



Paul
Weatherall

Paul Weatherall, M.D., a professor of radiology at the time of this publication, said the scanner provided images quickly and reduced the claustrophobia some patients felt during and the procedure.

"This scanner has the capabilities that everybody wants," he said in a press release. "It doesn't just provide the high-resolution quality images you need for standard brain and bone exams. It is so flexible that we can image tiny cranial nerves, analyze brain chemicals, produce a picture of the blood circulation and actually calculate the amount of blood flowing through the vessels, all at one setting."



Dianne
Mendelsohn

Dianne Mendelsohn, M.D., a professor of radiology at the time of this publication who was then director of neurologic MRI at the Meadows Imaging Center, said the new system would be used to develop imaging techniques and interventional procedures in the brain, neck, and head. Ron Peshock, then director of the Rogers MRI Center, described the system as "one-stop shopping" for analysis of some cardiovascular diseases that traditionally had required several exams and procedures.

A cardiovascular specialist, Peshock had graduated from UT Southwestern in 1976. He completed his internship, residency and fellowship training at Parkland hospital. He was then inspired by research cardiologist James Willerson, M.D., and Radiology chair Robert Parkey, to pursue appointments in both departments.

"DR. PARKEY ALWAYS ENSURED THE RADIOLOGY DEPARTMENT was the type of environment where people had the opportunity to pursue things, even when others didn't realize what was possible."

— Ron Peshock

"Drs. Parkey and Willerson believed in the important collaboration of imaging technology and the other disciplines," Peshock said. "Dr. Parkey always ensured the radiology department was the type of environment where people had the opportunity to pursue things, even when others didn't realize what was possible. There's value in letting people explore and that's what can lead to something completely new."



Ron Peshock

Peshock would become involved in the Dallas Heart Study, a multi-ethnic, population-based probability sample of Dallas County designed to define the social and the biological variables contributing to ethnic differences in cardiovascular health at the community level, and to support hypothesis-driven research aimed at determining the underlying mechanisms contributing to differences in cardiovascular risk.

Designed by Helen Hobbs, M.D., and Ronald Victor, M.D., the study made fundamental contributions to the prevention and treatment of heart disease, resulting in the publication of more than 100 papers in leading medical journals.

In 1996, Peshock was appointed assistant dean of informatics. In his new role he oversaw the use of information technology — informatics — in medical care by UT Southwestern and UT Southwestern Health Systems, a managed care contracting organization. Peshock had been chairing the clinical repository implementation group on campus and had worked closely with other clinicians and Kirk Kirksey, vice president of information resources, to find the best way for UT Southwestern to leverage information technology.



Helen Hobbs



1995

100th anniversary of
Röntgen's discovery
of X-rays.

"Medicine is changing in several ways," Peshock said in a press release. "The growth of integrated delivery systems, such as we're seeing here at UT Southwestern with our affiliated hospitals, demands that we work together. An efficient flow of patient information is necessary. This is the first step on our path toward the computerized medical record."

The medical center established a computerized repository so that no matter where the physician was — whether it was the James W. Aston Ambulatory Care Center, in his or her office, or at Zale Lipshy University Hospital — the patient's entire medical record could be found quickly via computer. Peshock also worked with the UT Southwestern Library to make full texts of medical journals easily available via computer.

Informatics was not the only update at Aston. Its radiology clinic continued providing physicians and their patients top-quality diagnostic images, particularly in women's imaging. A new computerized axial tomography scanner, providing detailed three-dimensional (3-D) and multiplanar body images, was purchased, leading to computed tomography (CT) exams taking as few as five to 10 minutes. The system also allowed radiologists to send patients' images to referring physician offices or clinics via computer.

"IT'S SURREAL TO CONSIDER how much radiology has changed and what a privilege it's been to learn from so many of the folks who were at the forefront."

— Cecelia Brewington

Another major purchase involved ultrasound equipment, which produced a series of small images to build a bigger, more detailed picture of the human body. Several years later, another ultrasound machine was obtained capable of creating 3-D images. The medical center was one of the first in Texas to have such a unit. Sonohysterography had also been established, allowing physicians using ultrasound to view a woman's endometrial cavity for polyps, tumors or other abnormalities that could cause uterine bleeding.

Cecelia Brewington, a professor of radiology and Community Radiology chief at the time of this writing, completed her residency training at Parkland hospital in 1995, and was then medical director of radiology at Aston. She credited the training she received at UT Southwestern with preparing her for radiology's ever-changing landscape.

"It's surreal to consider how much radiology has changed and what a privilege it's been to learn from so many of the folks who were at the forefront," she said. "Dr. Parkey, the Curry brothers, so many others, they came up with a foundation we've been able to use as a stepping stone to reach the next level."

As a child, Brewington was inspired to become a doctor because her younger brother had sickle cell disease. She wanted to go into medicine to help him and others. During her residency, two rotations peaked her interest: internal medicine and radiology.

"Radiology became the winner because I was drawn to all the new techniques and technology," Brewington said. "There was a continuous growth of possibilities for making diagnoses and coming up with new treatments and therapies, which went back to my initial roots for why I wanted to go into medicine."



Cecelia Brewington performs an ultrasound examination in 1999.



Diane Twickler |

Diane Twickler, who had a dual appointment as professor of obstetrics and gynecology at the time of this publication, became a mentor for Brewington. Her dual appointment offered referring physicians and patients an advantage in dealing with complex maternal-fetal cases.

The medical center's obstetrics and gynecology ultrasound service was the first unit in Texas to be nationally accredited by the American Institute of Ultrasound in Medicine. In addition to providing 3-D ultrasound (and, eventually, four-dimensional), UT Southwestern was one of only a handful of medical institutions in the nation to offer fetal MRI for particularly complex cases that required a higher degree of resolution.

"We can do fetal MRI at any time throughout gestation, but the preferred times are to answer important clinical questions at 21 to 22 weeks, or to anticipate what is going to happen closer to delivery, usually around 32 to 34 weeks," Twickler said. "Usually, I am asked to answer a very specific question, as opposed to global information that an ultrasound can answer. Referring physicians want to look deeper and make sure there is nothing else going on."

Examples of the types of conditions that Twickler investigated include problems with the central nervous system or head, problems with the chest or kidneys, congenital diaphragmatic hernias, and complications of twinning.

In 1997, eight years after opening, Zale Lipshy University Hospital's neuroangiography suite was drawing patients from South America and Europe. At the time, UT Southwestern was one of only two medical centers in the nation performing an experimental procedure using platinum microcoils to treat patients with ruptured brain aneurysms.

"Tremendous advances in technology have been made to enable this kind of work," said Phillip Purdy, then director of neuroradiology. "We are just starting to scratch the surface with these coils, too. They're going to get better and better."

Purdy would become first holder of the *Orien and Jack Woolf, M.D., Distinguished Chair in Neurosurgery and Neuroangiography*. Woolf was a pioneer in neurosurgery, and his wife made the gift to honor her husband's memory.

By this time, Lori Watumull, M.D., a UT Southwestern graduate and professor of radiology at the time of this publication, had joined Mary Ann Mullican at Zale Lipshy.

"UT Southwestern is the only place I've ever practiced medicine," Watumull said. "I was one of the 'lucky' ones to have the opportunity to take the oral boards. Residents now take final certification exams that are entirely computer based. The oral boards were very intense, but to the new generation of radiologists I imagine they seem archaic."

Also in 1997, Frederick Bonte, then director of the Nuclear Medicine Center, received the President's Award from the American College of Nuclear Physicians (ACNP), the organization's highest honor, in recognition of his pioneering work using radioactive materials in diagnosing diseases, especially of the heart and brain.



Phillip Purdy



1997

Frederick Bonte receives The President's Award, the American College of Nuclear Physicians' highest honor.



Children's Medical Center at Dallas

1998

Children's becomes one of the first pediatric hospitals in the nation to implement the Picture Archiving and Communication System (PACS) in radiology.

"The first reason I chose Fred — and there are many reasons — was because of his reputation and prowess as an educator," said David Brill, M.D., who trained under Bonte at UT Southwestern and was then president of the ACNP.

"He has touched many, many lives of younger colleagues and shepherded us all. He's also a well-known researcher whom we look to for advances, and as a co-founder of the American Board of Nuclear Medicine, he was instrumental in developing nuclear medicine into a medical specialty."

Two years later, President Clinton appointed Greta Joy Dicus chair of the United States Nuclear Regulatory Commission (NRC). A UT Southwestern graduate and a



Greta Joy Dicus

student of Mary Esther Gauden, the radiation biologist was first nominated by the president to serve as an NRC commissioner, in 1996. Dicus was the second health physicist to hold the position. While commissioner, she served as the NRC representative to the Joint Coordinating Committee for Radiation Effects Research.

At the start of the new millennium, UT Southwestern acquired St. Paul Hospital, and Zale Lipshy University Hospital assumed responsibility for its management. Not only was St. Paul's location highly desirable, the purchase nullified the need to



Lee Radford

expand Zale Lipshy. It also served as a convenient connection between the medical center's north and south campuses.

Lee Radford spent 23 years as chairman of diagnostic radiology at St. Paul. For more than two decades he and Fred Dunn, M.D., posted images on a bulletin board just inside the doors leading to the hospital's radiology department. In its heyday, "The Case of the Week" became a regular battle of

brains as emergency room doctors, surgeons and general practitioners tried their hand at using the images to make a diagnosis. Radiology residents also participated, but the contest was off-limits to staff radiologists. Radford

said it was a rare occasion when he and Dunn didn't find the answer box overflowing with possible diagnoses.

At north campus, three biomedical towers were added to the existing medical-imaging facilities: the Simmons Biomedical Research Building, opened 1993, the Nancy B. and Jake L. Harmon Biomedical Research Building, opened 1995, and the Seay Biomedical Building opened, opened 1999. The matching, interconnecting buildings were intentionally designed to encourage the mingling of researchers and clinicians to bring out the best in both.

The Seay building was the first north campus tower to house patient facilities, which included the Center for Breast Care. The center provided a comprehensive, team approach to diagnose, prevent, and treat both benign and malignant diseases of the breast.

In 2002, Phil Evans returned to UT Southwestern, where he received his medical degree in 1972, to be professor of radiology and director of breast imaging. He had directed the breast center at Baylor University Medical Center since 1984.



The Seay Biomedical Building on UT Southwestern's north campus



Glass artist Dale Chihuly designed the sculpture in the entrance to the Seay Biomedical Building.

1999

The Seay Biomedical Building opens on north campus.



Phil Evans

"I'd known Dr. Parkey for years, and we always ran into each other when traveling to the American Board of Radiology examination in Kentucky," Evans remembered. "I'd see him either on the plane coming or going to the meeting or at meals and he'd always say to me, 'So when are you going to leave Baylor and come to UT Southwestern?' And I'd always tell him I didn't know. Then Dr. George Peters came to Southwestern to be director of the Center for Breast Care in the Seay building and it was a great opportunity to provide high-quality medicine to a larger number of patients."

Beloved by patients, George Peters, M.D., was one of the nation's pre-eminent breast cancer and breast care specialists. After experiencing a heart attack, Peters retired, leaving Evans to take over as director of the Center for Breast Care. His leadership in multi-institutional studies would pave the way for the nation's switch from film to digital mammography and improve breast cancer screening for high-risk patients by combining mammography with ultrasound.



2000

UT Southwestern
acquires St. Paul
University Hospital.

The same year Evans arrived, the Department of Radiology acquired a PET-CT scanner that allowed physicians to simultaneously perform a positron emission tomography (PET) scan and computerized tomography (CT) scan. PET scanners and CT scanners were not new, but the ability to perform both scans simultaneously was. And that ability enabled doctors to locate tumors and other abnormalities with greater precision.

Another CT scanner was also purchased and installed at the Aston Center.

Sixteen separate slices could be produced in one revolution of the camera instead of one scan at a time. The device performed most routine studies (cardiovascular scans and lung analyses) in 15 seconds or less. On average, 30 scans per day were being performed with the scanner after its installation.



PET-CT scanner

In 1998, George Curry, then residency director in diagnostic radiology at UT Southwestern, and Jerry Arndt, M.D., former residency director at Baylor University Medical Center, approached Dianna Otterstad about starting an association of radiology program coordinators. Otterstad, then education coordinator at UT Southwestern, worked with Arndt to measure interest among coordinators throughout the nation.

Responses were overwhelmingly positive and, with the blessing of the Association of Program Directors in Radiology, the Association of Program Coordinators in Radiology (APCR) was established. Otterstad served as the organization's first president and was later recognized with its Outstanding Coordinator Award, in 2006.

At the dawn of the 21st century, UT Southwestern and the Department of Radiology continued experiencing exceptional growth. And the philanthropic efforts of a Texas governor were about to take things to a whole new level.



2000

Helen Redman dies after experiencing complications from breast cancer.



2001

Former medical residents and students raise \$400,000 to help establish the Dr. Jack Reynolds Chair in Radiology.



COLLABORATION *and*
COOPERATION

CHAPTER 9

UPON ARRIVING IN DALLAS during the 1970s, Dean Sherry, Ph.D., encountered a logistical challenge when it came to conducting research. The University of Texas at Dallas had hired him as one of four chemists to start a chemistry department, which included a single building and no laboratory space. Fortunately, a UT Southwestern biochemistry professor, G. Larry Cottam, Ph.D., offered Sherry the space he needed. Sherry then spent several years shuttling between his classroom at UT Dallas and his lab at UT Southwestern.

Although he spent more time at the UT Dallas campus once his lab was built there, Sherry continued to collaborate with his counterparts at the medical center. That alliance led to his 1990 joint appointment as professor of chemistry at UT Dallas and professor of radiology at UT Southwestern. It was also the impetus for his meeting Craig Malloy, M.D., a professor of radiology who had joined the UT Southwestern faculty in 1984.

Malloy, who completed his residency training at Parkland hospital, and Sherry would go on to become the world's authorities on applications of stable isotopes and magnetic resonance. Understanding how metabolism functions in the heart and other organs became their primary focus.



Craig Malloy



Dean Sherry

Their collaborative partnership and their shared expertise made them ideal candidates to lead the Advanced Imaging Research Center (AIRC). Created in 2005, the AIRC brought together UT Southwestern and other North Texas institutions to conduct research in MRI and MRS, and translate scientific discoveries into clinical practice. A special appropriation championed by then-Texas House Speaker Tom Craddick from Midland, along with other members of the Dallas legislative delegation, guaranteed state funding for the center, with additional major endowments secured from Dallas philanthropists.

However, the AIRC needed one more financial boost to complete its new home. Enter former Texas Governor William P. “Bill” Clements.



Rita and Bill Clements

Clements had been a college classmate of Charles Sprague when the two studied chemistry together at Southern Methodist University. In 1967, he served on the search committee that convinced Sprague to return to Dallas from Tulane University School of Medicine to be dean of the medical school. Considering his classmate had gone on to become the university’s first president, Clements was eager to provide the needed boost.

“WE HAVE BEEN SUPPORTERS OF UT SOUTHWESTERN since its early years, and I’ve always been proud of my association with the medical center, which I regard as an important asset to the state of Texas.”

— William P. “Bill” Clements

With a donation of \$10 million to the Southwestern Medical Foundation, Clements ensured a new research and clinical building featuring the most powerful technologies in the world would be completed. The Bill and Rita Clements Advanced Medical Imaging Building was formally dedicated in November 2006.

"We have been supporters of UT Southwestern since its early years, and I've always been proud of my association with the medical center, which I regard as an important asset to the state of Texas,"

Clements said in a press release. "The new building is a great addition to the campus, and we're happy to be a part of the future of biomedical research in this way."

In the same press release, Kern Wildenthal referred to the Clements as "true champions of Texas, higher education and medical science," with Malloy adding, "This building will provide a dramatic expansion of imaging research and clinical capabilities at UT Southwestern."

Sherry was named director of the AIRC, while Malloy became its medical director.

The Clements Building houses the AIRC and also encompasses eight specially designed bays for clinical and research imaging devices, including a large area for one of the nation's first 7-Tesla MRI machines dedicated to human studies.



Bill and Rita Clements (foreground) cut the ribbon at the opening of the Bill and Rita Clements Advanced Medical Imaging Building. The Clements gave \$10 million to Southwestern Medical Foundation to complete construction and equip the building with state-of-the-art imaging technologies. In the background, from left, are UT System Chancellor Mark G. Yudof, UT System Health Affairs Executive Vice Chancellor Kenneth I. Shine, UT System Board of Regents Chair James R. Huffines, and UT Southwestern President Kern Wildenthal.



NOVEMBER 2006

The Bill and Rita Clements Advanced Medical Imaging Building is dedicated.

Made available to UT Southwestern through philanthropic donations, along with a special federal appropriation championed by U.S. Senator Kay Bailey Hutchison, the 7-Tesla device was roughly 140,000 times more powerful than Earth's magnetic field and capable of the highest-resolution imaging then available. MR images at 7-T allow investigators to observe anatomical structures never before seen in the human brain.

"IT WAS SUCH NEW TECHNOLOGY I had to design the radiation shielding protocols and those writings actually have become part of the standard guidelines for PET facilities across the country."

— Jon Anderson

In addition to MRI, the building also housed the Positron Emission Tomography (PET) facility, which had two scanners producing maps of metabolic processes in the body. Optical imaging devices, powerful CT scanners, nuclear magnetic resonance spectroscopy devices and other advanced imaging instruments were also deployed throughout the Clements Building with a comprehensive ability to perform preclinical research.



Jon Anderson

Jon Anderson recalled planning for the arrival of the PET device at its new home.

"Back then, UT Southwestern did not have a cyclotron, which is needed to get isotopes required for a PET scanner," he said.

"But then it became possible to buy isotopes from companies with a cyclotron. They could ship material with large enough doses to administer to patients. Suddenly it was possible for a lot more medical centers to get into the PET game. The scanner was originally housed at Records Crossing because there was room after

the MRIs moved to the [Mary Nell and Ralph B.] Rogers Imaging Center. It was such new technology I had to design the radiation shielding protocols and those writings actually have become part of the standard guidelines for PET facilities across the country.”

One of the building’s most important functions was housing offices and laboratories for UT Dallas, UT Arlington and UT Southwestern researchers working side by side on major cooperative projects. Other Texas universities and medical centers, both public and private, were also invited to access the unique capabilities offered at the facility.

“The far-sighted support of Governor and Mrs. Clements, other generous philanthropists, and state and federal leaders has enabled biomedical scientists, clinicians, engineers, physicists and computer scientists from UT Southwestern, UT Dallas, UT Arlington and other Texas institutions to join hands in using the most sophisticated technology available to solve the most complex problems of medicine for the 21st century,” Wildenthal said.

At St. Paul University Hospital, physicians began conducting research with a new cardiovascular MR system. Made possible with gifts from Dallas philanthropists, the device allowed detection, identification and enhanced diagnosis of coronary artery disease in patients who had heart transplants.

“THE FAR-SIGHTED SUPPORT of Governor and Mrs. Clements, other generous philanthropists, and state and federal leaders has enabled biomedical scientists, clinicians, engineers, physicists and computer scientists from UT Southwestern, UT Dallas, UT Arlington and other Texas institutions to join hands in using the most sophisticated technology available to solve the most complex problems of medicine for the 21st century.”

— Kern Wildenthal

2007

The department mourns the deaths of longtime faculty members Mary Esther Gaulden, Edward Dowdy, and Jack Reynolds



Mary Esther Gaulden handles a grasshopper.



Edward Dowdy



Jack Reynolds (left) and Robert Parkey

Late 2007 marked the deaths of three longtime Radiology faculty members: Mary Esther Gaulden, the “Grasshopper Doctor,” Edward Dowdy, Ph.D., coauthor of the Second, Third and Fourth Editions of *An Introduction to the Physics of Diagnostic Radiology*; and renowned teacher Jack Reynolds.

“When Dr. Reynolds’s decided to retire, he asked me to take over teaching medical students,” recalled Wally Hooser. “He remembered me as a resident and that I loved to learn and teach. I actually almost didn’t become a radiologist because, as a young man, I developed an autoimmune disease. It forced me to retire early from the Army Medical Corps and many resident programs simply wouldn’t take me because they weren’t sure I’d live long enough to finish. Then the people at UT Southwestern told me they thought I’d make a great resident and accepted me. Dr. Reynolds had a part in that.”

By the year’s end, the “Innovations in Medicine” campaign — the most ambitious fundraising effort in Dallas history — received gifts and pledges totaling more than \$750 million from

over 600 donors. Most of the funds raised in the campaign were directed toward endowments and projects focused on major diseases of particular importance for which breakthroughs were thought possible over the ensuing years.

In 2008, a partnership between UT Southwestern and UT Arlington led to the creation of the Optical Medical Imaging Center, consisting of four labs in the Clements Building. There, UT Arlington engineering professors began working with UT Southwestern physicians to test medical imaging projects in various stages of development.

The joint effort marked the first time the medical school had dedicated space to an engineering school, although an affiliation between the two schools had existed since the 1970s when a joint biomedical engineering program was initiated. In 2008, that program had more than 170 graduate and doctoral students enrolled. It became an example of how joint efforts could grow substantially as science and health demands evolved.

The Optical Medical Imaging Center was funded through a Congressional appropriation, as well as peer-reviewed and competitive awards. Its opening, on Aug. 29, 2008, was attended by Wildenthal as one of his last official acts as president before retiring.

On Sept. 2, 2008, Daniel K. Podolsky, M.D., became UT Southwestern's third president.



2007

The "Innovations in Medicine" campaign recieved gifts and pledges totalling more than \$750 million, making it the most successful fundraising effort in Dallas history.

SEPTEMBER 2, 2008

Daniel K. Podolsky becomes UT Southwestern's third president.

At the time, the university had more than 10,000 employees and an operating budget of \$1.5 billion. There were 1,500 full-time faculty members, including four active Nobel Prize winners, more than any other medical school in the world. It was estimated that UT Southwestern physicians provided medical care in 40 specialties to nearly 97,000 hospitalized patients and oversaw 1.7 million outpatient visits annually.

The three degree-granting institutions — UT Southwestern Medical School, UT Southwestern Graduate School of Biomedical Sciences and UT Southwestern School of Health Professions — were training nearly 4,200 students, residents and fellows each year. Additionally, UT Southwestern researchers were involved in more than 3,500 research projects annually.

Podolsky, who had a long-term association with Harvard Medical School and had attained the level of professor in addition to key leadership positions in Partners Healthcare, said his decision to come to UT Southwestern was in large part based on the opportunity to build on the remarkable accomplishments made since UT Southwestern had been established nearly 65 years before, and its bedrock values of excellence in research, education and patient care.

2008

UT Southwestern's Center for Breast Care becomes the first site in North Texas to obtain a fully-automated 3-D breast ultrasound machine.



Phil Evans

Those values also could be found at UT Southwestern's Center for Breast Care. UT Southwestern was the first site in North Texas to obtain the newest technology in breast imaging, a fully automated 3-D breast ultrasound machine.

In a 2008 press release, Phil Evans explained there were benefits to adding automated 3-D breast ultrasound to the array of screening methods available to detect breast cancer in women who were considered high-risk. Multiple images of breast tissue could be reviewed at a 3-D workstation with data being captured in three dimensions as opposed to a flat image. Physicians could then review images from any angle, uncovering areas that previously might have remained unseen. They could also review multiple views simultaneously.

"IT'S [ULTRASOUND] PURELY AN ADDITIONAL TOOL for women who are high-risk, but their risk is not high enough for magnetic resonance imaging."

— Phil Evans

Although ultrasound is more comfortable than mammography, Evans stressed mammography should not be eliminated. He advised individuals at high risk to alternate between ultrasound and mammography every six months.

"It's purely an additional tool for women who are high-risk, but their risk is not high enough for magnetic resonance imaging," he said.

Evans, who held *The George and Carol Poston Professorship in Breast Cancer Research* from 2003 to 2013, had decided to specialize in breast cancer during his time at Baylor University Medical Center. He was a just beginning his practice as a diagnostic radiologist when the chief of his department approached him about a new breast ultrasound machine.



2009

William P. Clements (center) makes an unprecedented gift of \$100 million to UT Southwestern.

"He said the manufacturer will let us try it for six months and why don't you check it out and see what you think?" Evans recalled. "And so I did. It looked pretty good, and I thought it was interesting. So we brought it back and installed it in our department, and then I realized what the implication of all this was: I was going to be the one who was the champion of it, saw all the patients, and interpreted all the exams. I said to my chief: 'You know, I am really getting involved in this. Are you sure you want me to do all this?' He said, 'Evans, he who mounts the tiger cannot dismount it at will.'"

The following year, Clements made an unexpected and unprecedented \$100 million gift to UT Southwestern through the Southwestern Medical Foundation — the largest single donation in the institution's history.

"This historic gift, especially noteworthy in his insistence that there be no restrictions on its use, allows us to create the William P. Clements Jr. Fund with our pledge to apply it strategically in truly transformative ways to advance and improve the human condition," Podolsky said in a press release.

In 2010, UT Southwestern once again became the first site in North Texas to launch the next-generation of CT scanners. A dynamic volume CT scanner, which could generate detailed 3-D images of an organ in real time, allowed doctors to image an entire organ in less than a second or to track blood flow through the brain or to a tumor — all with less radiation exposure to patients. Because the machine's technology could take continuous

"THIS HISTORIC GIFT, especially noteworthy in his insistence that there be no restrictions on its use, allows us to create the William P. Clements Jr. Fund with our pledge to apply it strategically in truly transformative ways to advance and improve the human condition."

— Daniel K. Podolsky

or intermittent images, UT Southwestern's radiologists anticipated better visualization in neurology, trauma, whole body, lung, cardiac, vascular and pediatric studies. Other applications included providing distinctive capabilities in orthopedic and joint studies, diagnosing renal function, and even vocal-cord analysis. For patients, the new technology meant less time in a scanner and less exposure to radiation.

"This has the potential to impact the daily medicine we currently practice and help us identify future clinical pathways," said Evans, who was associate vice president for clinical imaging, in a press release. "UT Southwestern is fortunate to have clinical experts and forward-looking researchers who will really be the ones to determine its best uses.

Technology, even the best technology, still depends on the expertise of those using it."

The year 2010 also marked one of the most significant changes the Department of Radiology had seen in decades: After 33 years as chair, Robert Parkey retired. His successor, Neil M. Rofsky, had distinguished himself as a professor of radiology and director of MRI at Beth Israel Deaconess Medical Center in Boston.

"In The Matrix movie the 'chosen one' is a guy named Neo," Parkey said. "It took two hours for the audience to find out for sure if he really was the one. It took me only 10 minutes to know Neil was 'the one' for this department."



2010

UT Southwestern again becomes the first site in North Texas to launch the next generation of CT scanners.

2010

Robert Parkey retires after 33 years as chair of the Department of Radiology.

"IT TOOK ME ONLY 10 minutes to realize that Neil was 'the one' for the department."

— Robert Parkey



P R O F I L E S *in* L E A D E R S H I P

NEIL M. ROFSKY, M.D.

TAKE A DEPARTMENT TO INTERNATIONAL TOP-TEN STATUS. For many, such a goal is too lofty. But for Neil M. Rofsky, M.D., the Department of Radiology's fourth chair, it was precisely why he came to UT Southwestern. Understanding the department's legacy of excellence and innovation, Rofsky knew he would head the department during another time of unprecedented expansion.

"The description I give when recruiting is we're on a steep, positive trajectory and you'll want to be along for the ride," Rofsky said. "There's going to be a crossover point and you'll want to be on the bus, because it's going to be crowded; there may not be room for you when we crossover. Our mission is to grow and sustain a world-class radiology department, characterized by its ability to translate innovations in imaging, information technologies, and image-guided therapies to optimize patient outcomes."

"**OUR MISSION** is to grow and sustain a world-class radiology department, characterized by its ability to translate innovations in imaging, information technologies, and image-guided therapies to optimize patient outcomes."

— Neil M. Rofsky

A native New Yorker, Rofsky spent his early years on the East Coast. After earning his bachelor's degree in biochemistry at the University of Maryland in College Park, Maryland, he received his medical degree from New York Medical College in Valhalla, New York. He then completed an internship in internal medicine at Middlesex University Hospital in New Brunswick, New Jersey, followed by fellowship training in nuclear medicine at the University of Utah Medical Center in Salt Lake City.



For his residency training, Rofsky chose New York University Medical Center, where he also completed fellowship training in abdominal imaging and magnetic resonance imaging (MRI). He then served as director of Body MRI at NYU from 1996 to 2000. There he pioneered the use of rapid, three-dimensional diagnostic imaging of the abdomen. Such rapid imaging is important because it enables clinicians to obtain high-resolution three-dimensional images during the brief time that a patient can hold a single breath, reducing artifacts from respiratory and other motions.

“BY ACTIVELY RECRUITING AND CULTIVATING clinicians and residents with the same passion, the same dedication to excellence, the same intellectual vibrancy, we are creating a unique department and stimulating our colleagues.”

— Neil M. Rofsky

In August 2000, he was recruited to become the director of MRI at Beth Israel Deaconess Medical Center in Boston, where he earned the rank of professor of radiology at Harvard Medical School. There, he continued collaborating with scientists to develop new MR hardware and imaging strategies to better evaluate and understand disease. One of those individuals was Robert Lenkinski, Ph.D. The two led a team that pioneered the use of whole body 3T MRI in a collaboration with GE Medical Systems, a technology that previously was considered by most to be impossible for body imaging. That work ultimately resulted in his being awarded a Research Project Grant (R01) from the National Institutes of Health to assess prostate cancer using 3T.

It was through Lenkinski that Rofsky met Dean Sherry, Ph.D., who eventually led the search committee for a new chair of radiology at UT Southwestern, and convinced Rofsky to consider the position.

“Dean invited me down to Texas to look,” Rofsky recalled. “I’d imagined myself as someone who’d be on the East Coast for life, so heading south seemed pretty preposterous. But Dean is patient and persistent, so I agreed to visit with the intent of simply appealing a friend. However, as I explored the department and learned more about its rich history, I became really excited. And Dr. Daniel Podolsky, president of UT Southwestern, was another big motivator. Not all people in leadership positions at medical centers understand the importance of an excellent radiology department. Dan did, because he came from Massachusetts General Hospital, which has enjoyed a long reputation as one of the best radiology departments in the country. He knows what’s possible in the field and our goals for the department were aligned.”

In September 2010, Rofsky officially succeeded Robert Parkey, who stepped down as chair after more than three decades. Following his appointment, Rofsky began recruiting new talent to the medical center, which included other radiology luminaries, such as Lenkinski, Ivan Pedrosa, M.D., also from Beth Israel, Suhny Abbata, M.D., John Barr, M.D., Avneesh Chhabra, M.D., Julia Fielding, M.D., Sanjeeva Kalva, M.D.,



John Leyendecker, M.D., Robert Mattrey, M.D., Joseph Maldjian, M.D, and Rathan Subramaniam, M.D., Ph.D, M.P.H.

At the time of this publication, Rofsky also served as director of translational research for the Advanced Imaging Research Center (AIRC), a center created under the direction of the late Alfred G. Gilman, M.D., Ph.D., Noble Laureate in Medicine and Physiology and, at the time, dean of the UT Southwestern medical school.

"IT'S A GREAT PRIVILEGE to take the reins from those who came before me and build on that foundation to reach new milestones. I know we can achieve the goal of becoming a top-10 radiology department."

— Neil M. Rofsky

Regarding the role of radiologists, Rofsky emphasized the importance of translating innovations in imaging to improve patient care. "In a certain percentage of our work, the critical skill lies in how successful we are at generating an image that reveals very small areas of diseased tissue," Rofsky said. There's an aesthetic element, too, and when the generated image is optimal, you often feel a sense of awe — you've created a unique 'work of art' that enables critical observations, allowing patients to receive the most targeted and effective treatments."

Rofsky also fulfilled the Department of Radiology's long-term goal of establishing a cyclotron facility at the Bill and Rita Clements Advanced Medical Imaging Building on UT Southwestern's north campus. The Cyclotron and Radiochemistry Program leverages the cutting-edge imaging technology of positron-emission tomography for biomedical research.

Regarding the future of radiology, Rofsky was very confident about the role UT Southwestern would play.

"By actively recruiting and cultivating clinicians and residents with the same passion, the same dedication to excellence, the same intellectual vibrancy, we are creating a unique department and stimulating our colleagues," he said. "The phenotype I am speaking of consists of physicians who are not satisfied unless they are favorably changing the standard of care in their communities, whether they're in a small community in Texas, a busy private practice in New York City, or a major academic medical center. It's a great privilege to take the reins from those who came before me and build on that foundation to reach new milestones. I know we can achieve the goal of becoming a top-10 radiology department."

At the time of this publication, Rofsky also served as president of the Society of Computed Body Tomography and Magnetic Resonance (SCBTMR), and on the board of trustees of the International Society for Magnetic Resonance in Medicine (ISMRM).

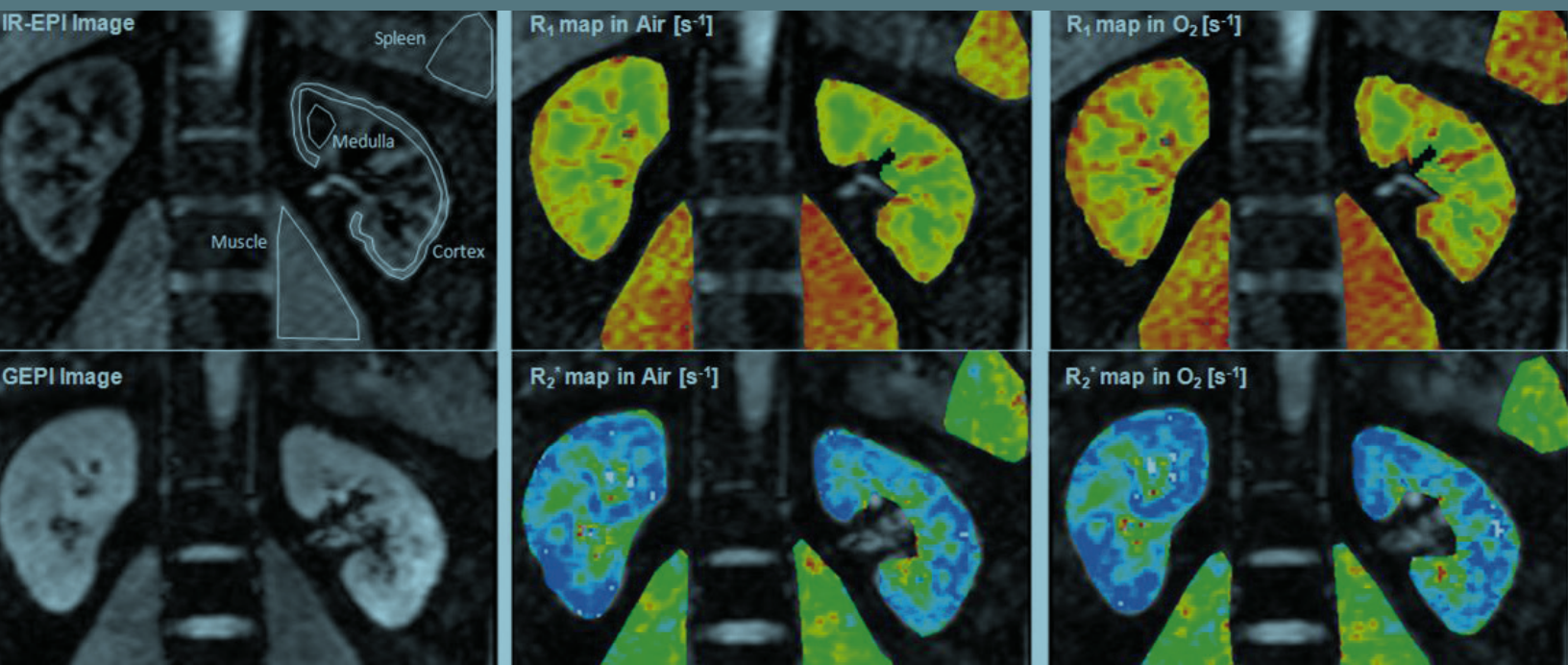
He had also authored more than 170 peer-reviewed publications, in addition to several textbooks. Moreover, he was a regular presenter at medical societies and professional organizations, such as the Radiological Society of North America, the ISMRM and the SCBTMR. He served as a consultant to device and contrast agent manufacturers, major radiology organizations and the U.S. Food and Drug Administration.

As the Department of Radiology observed its 60th anniversary, Rofsky celebrated his nearly six-year association with the department along with his wife, Lisa, and their two children, Anna and Bennett.





INSPIRED by EXAMPLE



Top: Robert Lenkinski

Below: Oxygen-enhanced magnetic resonance image of human organs.

CHAPTER 10

ALTHOUGH NEIL M. ROFSKY never trained at UT Southwestern, the medical center had a role in his education. After receiving his bachelor's degree in biochemistry from the University of Maryland in College Park, Maryland, he planned on specializing in internal medicine. While pursuing his medical degree at New York Medical College in Valhalla, New York, he took an elective course in radiology during his last month of medical school that he said "showed him the light."

Rofsky began applying for a radiology residency program during his internship in internal medicine at Middlesex University Hospital in New Brunswick, New Jersey, which led him to Naomi Alazraki, M.D., then chief of nuclear medicine at the University of Utah Medical Center in Salt Lake City. Under her guidance, he completed fellowship training there in nuclear medicine.

"ONE OF MY PROFESSORS was a gentleman named Frederick Datz, and all he talked about was his nuclear medicine training at UT Southwestern under a guy named Dr. Bob Parkey. He'd say, 'I learned this from Parkey,' 'Parkey told me this,' and 'Parkey told me that.' So, indirectly, I was influenced by Dr. Parkey."

— Neil M. Rofsky

"One of my professors was a gentleman named Frederick Datz, and all he talked about was his nuclear medicine training at UT Southwestern under a guy named Dr. Bob Parkey," Rofsky said. "He'd say, 'I learned this from Parkey,' 'Parkey told me this,' and 'Parkey told me that.' So, indirectly, I was influenced by Dr. Parkey."

2010

Neil M. Rofsky becomes the Department of Radiology's fourth chair.



Rofsky then returned to New York for radiology residency training at the New York University Medical Center, where he remained to complete advanced training through a fellowship program in abdominal imaging and MRI under the mentorship of Morton Bosniak, M.D., Alec Megibow, M.D., and former UT Southwestern faculty member Jeffrey Weinreb.

Rofsky would become chief of MRI at Beth Israel Deaconess Medical Center and a professor of radiology at Harvard Medical School in Boston. There, he pioneered the development and application of several advanced imaging techniques, including noninvasive magnetic resonance angiography and noninvasive three-dimensional (3-D) approaches to measure liver fat and iron within the span of a breath hold. Relocating to Texas had never been considered — until UT Southwestern came calling.

“At first I wasn’t keen on becoming chair,” Rofsky remembered. “I’m a native New Yorker, and settling in Boston had seemed like a big move. I decided to visit the campus to more or less politely say, ‘I’ve looked, no thanks.’ But then I came and found excellent resources and a supportive environment. The administration was very forthcoming about wanting a world-class radiology department. I realized something spectacular could be achieved, and the department’s successes would be the medical center’s pride.”

“THE ADMINISTRATION was very forthcoming about wanting a world-class radiology department. I realized something spectacular could be achieved, and the department’s successes would be the medical center’s pride.”

— Neil M. Rofsky

In addition to serving as department chair, Rofsky continued his career-long research efforts to develop novel approaches to detecting and monitoring prostate, liver, and renal cancers through the use of high spatial resolution and physiologic-based MRI techniques.

Beyond the radiology department, major changes were underway. In 2010, ground was broken on a new Parkland campus after Dallas voters overwhelmingly supported replacing the aging hospital with a new facility.

Julie Champine, M.D., a professor of radiology at the time of this writing, came to UT Southwestern for her internship and residency training. In 1993, she completed fellowship training in MRI and eventually became chief of radiology at Parkland, serving in that role for more than two decades.

"I was attracted to the training program because it was truly hands-on, and there were several women faculty members," Champine said. "For many years, every radiology department at UT Southwestern hospitals and affiliated hospitals were run by female chiefs. When I became chief of radiology at one of the largest hospitals in the country, both Drs. Parkey and Bonte were extremely forthcoming with advice and guidance."

Orhan Öz, M.D., Ph.D., professor of radiology and holder of *The Wechun Pak Professorship of Bone Biophysics* at the time of this publication, also came to Parkland during the 1990s and eventually became the hospital's medical director of nuclear medicine. He had decided to enter the medical profession after watching his grandmother deal with cancer. He later realized the field allowed him to combine scientific investigation with helping people, both interests dear to his heart. "I was advised to consider UT Southwestern and Parkland for radiology residency training by Dr. Barton



"FOR MANY YEARS, every radiology department at UT Southwestern hospitals and affiliated hospitals were run by female chiefs."

— Julie Champine



Orhan Öz

Lane, the student advisor for radiology at my alma mater, Stanford University,” Öz said. “He was familiar with the program through a friend and colleague, Dr. Helen Redman, and he thought it would meet my desire for a region with affordable housing for families, and my learning style. I visited the campus and interviewed with the chairman, Dr. Robert Parkey, and we really hit it off. It was immediately obvious he was a different type of thinker than most chairmen I had met.”

Öz said the two shared stories about spending time on farms and rural areas, as well as their mutual sense of responsibility to give back to those less fortunate. Working at

Parkland helped him develop confidence, Öz added, “because of the sheer volume of patients and the variety of cases. The close proximity of basic science departments to the hospital during my residency allowed me to pursue clinical training and scientific research nearly seamlessly.”

THE CLOSE PROXIMITY of basic science departments to the hospital during my residency allowed me to pursue clinical training and scientific research nearly seamlessly.”

— Orhan Öz

Parkland’s new hospital would not be the only one in Dallas. In 2010, the UT System Board of Regents and the Texas Higher Education Coordinating Board approved plans for an \$800 million state-of-the-art University Hospital at UT Southwestern. St. Paul’s, which

opened in 1963, had become too costly to maintain and renovate as an academic medical center.

That same year, The Harold C. Simmons Cancer Center at UT Southwestern became the first medical center in North Texas to attain National Cancer Institute (NCI) designation, a prestigious distinction held by only the top-tier cancer centers nationwide.

"NCI cancer center designation is a national benchmark, and our selection provides welcome confirmation of the exceptional quality of cancer discovery and patient care at UT Southwestern," Daniel Podolsky said in a press release. "It places the Simmons Cancer Center among the most elite centers in the country for advancing cancer research and providing cancer care."

Ralph Mason, Ph.D., conducted some of that research. A professor of radiology and director of the preclinical Cancer Imaging Program at UT Southwestern at the time of this publication, Mason focused on using various imaging methods to gauge tumor development and determine how tumors respond to therapy.

Mason led the development of a new technique known as BOLD (blood oxygen level dependent) MRI, which can detect oxygen levels in tumors without the need for an invasive procedure. Patients need only be able to breathe in oxygen while undergoing an MRI procedure. Doing so could help oncologists develop more personalized therapies.

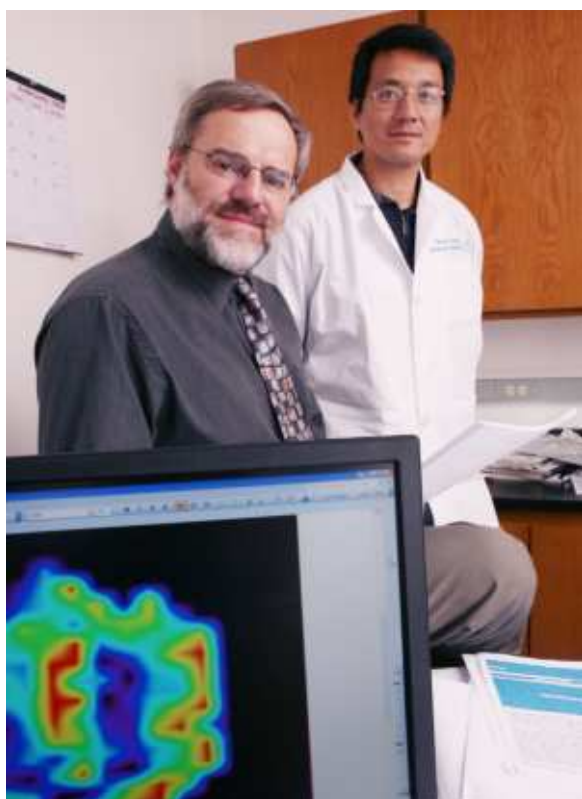


2010

The Harold C. Simmons Cancer Center at UT Southwestern becomes the first and only medical center in North Texas to attain the prestigious NCI designation.

"I HAVE ALWAYS FELT WELCOMED with open arms. Southwestern has a strong tradition of collaboration, which provides opportunities for significant, pioneering research. "

— Ralph Mason



Ralph Mason (left) and Dawen Zhao demonstrated that blood oxygen level dependent MRIs might help oncologists determine the best treatment for some cancer patients.

Further research determined countering hypoxic and aggressive tumors with the "oxygen challenge" coincided with a greater delay in tumor growth in an irradiated animal model. Smaller tumors were found to be significantly better oxygenated than larger ones, confirming previous investigations that showed a range of hypoxic environments depending on the tumor size. The next step would be clinical trials to assess tumor response to radiation therapy.

Mason and his colleagues were also among the first to show that a technique called bioluminescence imaging (BLI) could be used to determine the effectiveness of cancer drugs that choke off a tumor's blood supply. Although MRI was the gold standard of medical imaging, BLI had its advantages. The noninvasive procedure allowed detection of cell viability not accessible by MRI and was less costly.

"Ultimately, the MRI is much more sophisticated and can do more, but BLI is very straight-forward," Mason said

in a news release. "It's perfect for evaluating new classes of drugs designed to cause acute vascular changes in tumors because the tests are inexpensive and easy to do."

At the suggestion of Laurance “Laurie” Hall, Ph.D., a world expert on MRI, Mason came to UT Southwestern in 1989 as a postdoctoral researcher after earning his doctorate at Churchill College in Cambridge, England. He joined the laboratories of Ray Nunnally and Peter Antich, and quickly decided to stay in Dallas.



Laurance Hall

“One of the things that really attracted me to Southwestern, and has kept me here, is the incredible cordiality,” Mason said. “Texas is known for its hospitality and that carried over into the lab. I have always felt welcomed with open arms. Southwestern has a strong tradition of collaboration, which provides opportunities for significant, pioneering research. ”



In 2008, Öz worked with Xiankai Sun, Ph.D., an associate professor of radiology and director of the Cyclotron and Radiochemistry Program (CRP) at the time of this publication, and Jon Anderson to establish the Preclinical Nuclear Imaging Laboratory to provide scientists with the ability to perform small animal positron emission tomography (PET) imaging. Then, in 2011, Öz oversaw efforts to secure a new single-photon emission computed tomography (SPECT) scanner to study animal models relevant to cancer, autoimmune diseases, metabolic disorders, and other conditions. Although UT Southwestern radiology researchers had previously designed custom SPECT scanners for small-animal imaging, he said the new machine enabled researchers to obtain very high-resolution images of organs and determine disease mechanisms, severity, progression, and regression in small animals at high-output rates not previously possible.



Orhan Öz, (top)
and Xiankai
Sun, (below)

“For the first time, we’ll be able to image two or even three processes simultaneously in living animals,” Öz said in a press release. “It also enables us to monitor infections and organ function after genetic or therapeutic manipulation and to track stem cells.”



“NEIL AND I BELIEVE

in ‘team science’ and that no single person can accomplish everything on their own. It’s much more about the department doing well than just the individual doing well.”

— Robert Lenkinski

Subsequently, the three joined forces, led by Sun and partnered with other investigators, to secure a cyclotron to create radioactive isotopes for use in biomedical imaging to detect and monitor diseases in the body noninvasively.

The same year, Robert Lenkinski, Ph.D., was recruited to assume the position of vice chair of research in the radiology department. He had worked closely with Rofsky for a decade at Beth Israel. Together, they built an MRI division that spanned technical development, translational research, and first-rate clinical body MRI.

“Neil and I believe in ‘team science’ and that no single person can accomplish everything on their own,” said Lenkinski, who held the *Charles A. and Elizabeth Ann Sanders Chair in Translational Research* at the time of this publication, in addition to the *Jan and Bob Pickens Distinguished Professorship in Medical Science, in Memory of Jerry Knight Rymer and Annette Brannon Rymer and Mr. and Mrs. W. L. Pickens*. “It’s much more about the department doing well than just the individual doing well. I have a sports background and compare it to basketball. Do you want to be the top scorer in the league or do you want to win the championship? They don’t always go together. If we win the championship, everyone is happy.”

Under Lenkinski’s leadership, the research program pursued several goals: development, validation and application of magnetic resonance spectroscopic and multi-nuclear imaging methods for the study of human disease; development of targeted molecular imaging agents; and development and validation of a number of quantitative MRI methods. These included arterial spin labeling, dynamic contrast enhanced MRI, and diffusion weighted MRI for the study of human disease.

Another radiologist who came to Dallas from Boston was Ivan Pedrosa, M.D. An associate professor and chief of the MRI division at the time of this publication, Pedrosa first met Rofsky during an elective rotation at New York University (NYU) Medical Center that he completed as part of his residency training at the Hospital Clínico San Carlos in Madrid, Spain.

"During the fourth year of residency in Spain you're allowed to request an elective abroad, lasting usually three or four months," he said. "I was interested in abdominal imaging and knew NYU was one of the best places in the United States. Dr. Rofsky taught me MRI and we really connected right away. We share a similar view of our specialty and what medicine should be in general. After finishing that elective, Dr. Rofsky offered me a formal one-year clinical fellowship training, which I completed with him at Beth Israel Deaconess Medical Center in Boston. We have worked closely since then. I trust Dr. Rofsky and felt confident moving to Boston first and then coming to Dallas with him."



"I TRUST DR. ROFSKY and felt confident moving to Boston first and then coming to Dallas with him."

— Ivan Pedrosa

Pedrosa's research program in kidney cancer focused on implementing novel MRI techniques for the correlation of imaging features and pathologic/genomic alterations (radiomics), the identification of vascular MRI measures that correlate to aggressiveness and molecular measures of angiogenesis, and the measures of tumor perfusion as an indicator of initial and acquired resistance to antiangiogenic therapies in metastatic disease. At the time of this publication, he served as co-leader of the Kidney Cancer Program at the Simmons Cancer Center and held the *Jack Reynolds, M.D., Chair in Radiology*.

UT Southwestern would again find itself on the international stage when Bruce Beutler, M.D., director of the Center for the Genetics of Host Defense, shared the 2011



2011

Bruce Beutler and two others scientists win the 2011 Nobel Prize in Physiology or Medicine for the discovery of receptor proteins that activate the body's immune response to disease.



Nobel Prize in Physiology or Medicine with two other scientists for their immune system investigations. Beutler was honored for the discovery of receptor proteins that recognize disease-causing agents and activate innate immunity, the first step in the body's immune response.

Two years later Thomas Südhof, M.D., adjunct professor of neuroscience and former chair of that department, was one of three scientists awarded the 2013 Nobel Prize in Physiology or Medicine for discovering key information about how cellular transport systems work.



William Kilman

Now known as The University of Texas Southwestern Medical Center, the institution could claim more active Nobel Prize laureates than any other medical school in the world.

A noteworthy passage occurred in 2012 with the death of William Kilman, who had served UT Southwestern for 40 years as a gastrointestinal radiologist and a respected teacher.

"He was the most patient and kind-hearted man you would ever meet,"

Champine remembered. "Everyone's favorite memory of Dr. Kilman is when he would show a resident case in conference. If the resident was completely clueless on the diagnosis, he had the kindest way of redirecting them by saying, 'Well now, that's a thought...' and then he would proceed to gently direct the resident towards a correct diagnosis.

Dr. Kilman was one of the first 'old guard' to embrace new technology and digital images,



2012

UT Southwestern welcomes its 70th class of first-year medical students.

and he had all his teaching files digitized very early on. When he retired, he left all his colleagues the wonderful legacy of his files, his conferences and all his teaching materials, many of which we still use adaptations of today. He was one of a kind — a gracious gentleman indeed.”

That same year, UT Southwestern welcomed its 70th class of first-year medical students. The new class found a much different and improved landscape than that of their long-ago predecessors. UT Southwestern was a place bustling with 21st-century technology and some of the brightest minds in American medicine.

“Our faculty ranks among the best in the country in the areas of basic sciences, clinical sciences, and in clinical medicine,” said Greg Fitz, M.D., executive vice president for academic affairs, provost and dean of the medical school.

“Medical students at UT Southwestern have access to training at some of the best clinical facilities anywhere, including Parkland Memorial Hospital, Children’s Medical Center Dallas, the Dallas Veterans Affairs Medical Center, and our two University Hospitals, St. Paul and Zale Lipshy.”

However, two of those facilities would be decommissioned to make way for the innovative hospitals that would continue a long tradition of paving the way in medical care.



2012

*Frederick Bonte
officially retires.*



2013

*Thomas Südhof is one
of three Nobel Prize
winners chosen for their
research into how
cellular transport
systems work.*

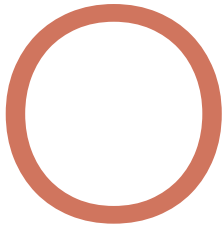




NO LONGER BEHIND *the* SCREENS

In 2015, a long-held dream of former chairs Frederick Bonte and Robert Parkey was realized when the radiology department launched its 4,000-plus-square-foot cyclotron facility.

CHAPTER 11



ON APRIL 12, 2012, UT Southwestern president Daniel Podolsky announced that the new state-of-the-art university hospital would be named to honor former Texas governor William P. Clements Jr., in recognition of his 2009 gift of \$100 million to the Southwestern

Medical Foundation — the single largest gift in the institution’s history.

In addition to Clements’ gift, UT Southwestern’s “Building the Future of Medicine” campaign (in conjunction with its philanthropic partner Southwestern Medical Foundation) exceeded its goal of raising \$200 million in support of the new facility.

Clements University Hospital was envisioned as a building that would support and facilitate the delivery of high-quality care for patients and families. The collaborative design process included nurses, physicians, support staff, and patients and their family members offering perspectives and ideas about quality, safety, efficiency, and the patient experience.



Phil Evans (left) and Michael Medina

“PEOPLE ON THE COMMITTEES were very engaged because we knew the architects and our leaders were listening to us. They wanted our perspective. They wanted to hear our ideas about making the building patient-centered.”

— Michael Medina

Michael Medina, UT Southwestern's associate vice president of clinical ancillary services at the time of this publication, participated in several planning work groups.

"People on the committees were very engaged because we knew the architects and our leaders were listening to us," he said. "They wanted our perspective. They wanted to hear our ideas about making the building patient-centered. And they listened to our thoughts about providing wonderful views, enabling caregivers to get to the patient quicker, and designing spaces that promote the best possible care. Those were our priorities."



THE HOSPITAL'S W-shaped design is distinctive and functional.

The hospital's W-shaped design is distinctive and functional. Dispersed workstations place nurses in close proximity to their patients, while rounding rooms and "touchdown areas" tucked away on patient care floors allow care teams to come together — moving conversations out of hallways and into more private areas. Caregivers can now discreetly meet with family members or confer with colleagues on how to best meet the needs of patients.

Regarding radiology, the hospital's design placed the vast majority of imaging equipment in direct proximity to the Emergency Department for easy access. Medina noted the new hospital had four computed tomography (CT) rooms equipped with the latest models, which could handle overflow when the emergency room got exceptionally busy. He also pointed out that the days of radiologists meeting with other specialists, residents or fellows in darkened rooms at the bottom floor of a hospital were at an end.



DECEMBER 6, 2014

*The William P. Clements
Jr. University Hospital
officially opens.*

John Warner, M.D., chief executive officer for UT Southwestern University Hospitals and Clinics at the time of this publication, agreed.

“More and more, radiologists are not just involved in producing and interpreting the images that guide therapy, they are an integral part of the team delivering the therapy — and assessing the response to treatment in real time,” he said. “With an increasing number of procedures and surgeries becoming image-guided, the role of radiologists as key members of the care teams will only increase.”

On December 6, 2014, patients were successfully transported from St. Paul University Hospital to the new facility during a single-day transfer. The hospital's opening marked a new era in clinical care for UT Southwestern and the North Texas community. At its opening, the hospital had two magnetic resonance imaging (MRI) machines, six X-ray suites, two nuclear medicine rooms and the four CT scanners.



John Warner views blueprints in front of the Clements University Hospital during construction.

"One of the real differences in imaging at Clements University Hospital is the availability of the high-resolution images and the many opportunities for collaboration as care is delivered," Warner said. "Images can be accessed on high-definition monitors in all patient rooms, as well as in the operating rooms and procedural environments. This allows patients, families and their entire team of healthcare providers enhanced

opportunities to collaborate in delivering care. As a hospital that treats the most complex patients in the region, often with advanced disease which has not responded to conventional therapy, having the very best, most advanced imaging techniques and equipment allows UT Southwestern providers to deliver cutting-edge therapies often not available at other hospitals and clinics. Our team-based approach to delivering care includes training students and physicians for success in what will be the true paradigm shift in medicine — one in which patients do not see a series of specialists in a series of encounters; rather, they are treated in one setting by a team of providers with specific roles and expertise."

Less than a year later, on August 20, 2015, the new Parkland hospital officially opened its doors. The old hospital had already become one of the busiest public hospitals in the nation, with more than 1 million patient visits annually. The new building eclipsed the old, nearly doubling capacity. Moreover, the Parkland Health & Hospital System included 20 community-based clinics, 12 school-based clinics, and numerous outreach and education programs.

More than 141,000 square feet was devoted to imaging in the new building — the equivalent of nearly two and a half football fields. Four of the 10 trauma and resuscitation rooms at the new hospital were equipped with built-in, individual X-ray systems to allow immediate viewing of images.



AUGUST 20, 2015

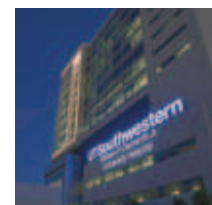
The newest Parkland Memorial Hospital opens.

Dedicated space within the Emergency Department also housed technology to provide diagnostic, CT, and ultrasound imaging, along with equipment for emergent ear and eye exams. A new positron emission tomography (PET) CT scanner, a technology that Parkland had not owned before, was also among the upgrades, as were four new MRI machines.

The hospital also included two stress echocardiogram suites, two endoscopy suites, and five nuclear medicine rooms. To ensure care providers had quick access to necessary images, advanced diagnostic imaging technology was strategically located throughout the hospital.

"The accuracy of the diagnosis depends both on the skill of the radiologist and the quality of images they view," said Travis Browning, M.D., an associate professor of radiology at the time of this publication, in a news release at Parkland's opening. "That's why access to the most advanced imaging technology is so important."

Additionally, Browning said the X-ray modalities in the trauma bays of the emergency department (uncommon in most hospitals) allowed patient X-rays to be performed in the same room where urgent care is provided. Having a new CT scanner in the Neuro ICU also meant critically ill patients would not have to travel through the hospital for imaging services.



2015

Clements University Hospital receives a Rising Star Quality Leadership award from the University HealthSystem Consortium for its quality and safety performance, and is identified as a Top Performer by The Joint Commission.



Lori Watumull prepares to perform a CT-guided biopsy.

Michael Jones, a 70-year-old Farmers Branch dentist, was the hospital's first emergency department patient and the first to have a CT scan and MRI in the hospital. Doctors were quickly able to identify a small clot in his brain. He would be discharged the following day and make a full recovery.

Lori Watumull shared another story on how the new hospital impacted one of its first patients.

"Several faculty members had the opportunity to visit a top floor of Parkland during its first weekend," she said. "The view was incredible, and as we stood there a patient walked by wheeling his IV pole. He said, 'What do you guys think?' and we replied it was obviously beautiful. I asked if he liked the new place and he said yes, then shared he had actually been born at old Parkland."

With the opening of Clements University Hospital, Zale Lipshy University Hospital began to be transformed into the region's first dedicated, freestanding neuroscience facility — one of only a few in the nation and among the world's premier neurological diagnostic and treatment centers.

"YOU GET THE FEELING anything is possible."

— John Leyendecker



John Leyendecker, M.D, professor and vice chair of clinical operations at the time of this publication, knew joining the radiology department during such growth was a once-in-a-lifetime opportunity.

"This period of time will be seen as a quantum leap for both UT Southwestern and the department," he said. "Having Dr. Rofsky here, a chairman with a strong vision for the future and one willing to make necessary tough decisions to ensure we realize that vision, to me was absolutely huge. The clinical operation is massive with multiple moving parts, but we have great leadership and a department of strong people working together. You get the feeling anything is possible."

Warner agreed with Leyendecker's assessment of Rofsky.



Robert Lenkinski and Suhny Abbata

"LEARNING ABOUT THE RICH HISTORY of this department really convinced me to come to Dallas."

— Suhny Abbata

"Dr. Rofsky has done a fantastic job of integrating his faculty with the multidisciplinary care teams," Warner said. "That is a longstanding UT Southwestern tradition, but he has really taken it to a new level. Pairing imaging faculty with disease-specific clinicians and surgeons has not only produced better care, but has also helped cultivate relationships that foster the exchange of ideas and information, ultimately leading to more innovation."

2015

The cyclotron facility becomes operational at the Bill and Rita Clements Advanced Medical Imaging Building.



Cyclotron installation at the Bill and Rita Clements Advanced Medical Imaging Building

The possibilities are what inspired Suhny Abbara, M.D., professor of radiology and chief of cardiothoracic imaging at the time of this publication, to contact Rofsky about joining the radiology faculty. Having made extensive contributions to the field of cardiovascular CT and MRI, Abbara knew he had to be part of the medical center's unprecedented growth.

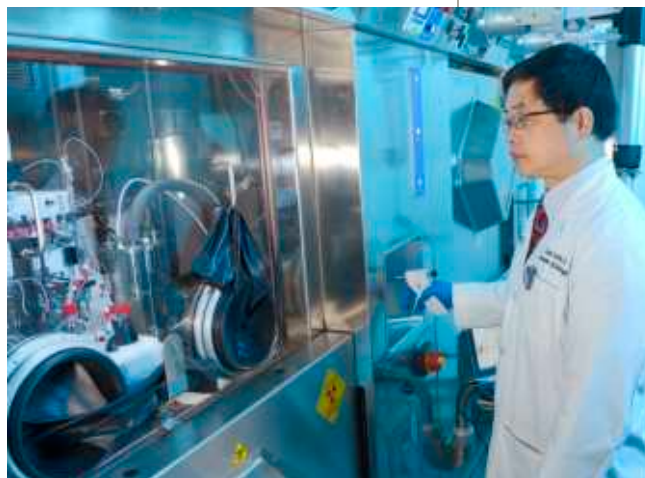
"Learning about the rich history of this department really convinced me to come to Dallas," he said. "It all comes down to how our actions will positively impact patient care and I am very passionate about teaching through publishing. Consider *Christensen's Introduction to the Physics of Diagnostic Radiology*, the perfect example of how a textbook can improve training and influence radiologists around the world. The patient care, research and teachings going on right now in this department, I'm confident they're all going to be just as significant for current and future radiologists."

In 2015, a long-held dream of former chairs Frederick Bonte and Robert Parkey was realized when the radiology department launched its 4,000-plus-square-foot cyclotron facility as part of the Bill and Rita Clements Advanced Medical Imaging Building on the north campus. The facility was established under the auspices of UT Southwestern and the Cancer Prevention and Research Institute of Texas (CPRIT), which had awarded the university \$4.2 million for the facility's set-up.

Xiankai Sun, principal investigator of the high-end instrumentation grant, said a goal of his recruitment to UT Southwestern 11 years earlier was to spearhead an institutional effort to establish a cyclotron and radiochemistry program.

"While the cyclotron is proposed primarily for translational and clinical research use, our long-term goal is to develop new PET tracers and imaging technology, which will ultimately enable precision medicine for better patient care," Sun said. "It is important North Texans have access to this type of imaging, there is a great need for it. And of course we want to improve and always stay at the forefront of the technology. There are so many unknowns for us to explore and goals to achieve to ultimately help patients."

Sun, who held the *Dr. Jack Krohmer Professorship in Radiation Physics* at the time of this publication, explained the cyclotron would make short-lived, biomedical radioisotopes readily available on campus, which were impractical to obtain from other locations. It would also aid in a variety of studies and clinical trials research across many disciplines, including radiology, the Advanced Imaging Research Center,



Xiankai Sun conducts a tour of the cyclotron facility.

the Harold C. Simmons Comprehensive Cancer Center, cardiology, immunology, psychiatry, biochemistry, pharmacology, and areas involving diabetes, Alzheimer's disease, and dementia.

"While there is strong emphasis on cancer applications, the products we create from the cyclotron will enable discoveries that span across multiple areas of medicine and physiology," Rofsky said in a same press release.

The department also continued making strides in the field of interventional radiology. Sanjeeva Kalva, M.D., associate professor of radiology and chief of the Vascular and Interventional Radiology division at the time of this publication, came to UT Southwestern in 2013 from Harvard Medical School. A Rofsky recruit, Kalva had years of experience with standard, underutilized, and cutting-edge interventional radiology techniques. He also helped establish standards of care for his peers in the field, including the use of inferior vena cava filters and the management of aortic disease. When Kalva arrived, more than 5,500 innovative, minimally invasive surgeries were being performed annually at the medical center.



Sanjeeva Kalva

Kalva was also actively involved in education, teaching interventional radiology to medical students, residents, and fellows and offering interdisciplinary lectures to physicians whose specialties overlap with interventional radiology. Kalva said he was drawn to medicine because of the opportunity to serve others at a very close level. Noting interventional radiologists had always been "out from behind the screens," he encouraged future radiologists to remember the patient, not the image, should always be the center of their focus.

Rofsky also considered the doctor-patient relationship an imperative part to the future of the specialty. He noted Phil Evans as just one example of faculty members setting the bar high.

"I can't tell you the number of people who have told me, proudly, 'Phil Evans is my doctor and as long as he's here I will receive my care at UT Southwestern,'" he said. "That's not a traditional concept regarding patients' perceptions of radiologists and there is great value in that. It's a mentality we're working to increase throughout all the clinical divisions."



"FOLLOWING WHAT M.K. GANDHI STATED, 'Live as if you were to die tomorrow and learn as if you were to live forever,' I made the bold and right move to pursue my vision and passion at UT Southwestern."

— Avneesh Chhabra

That conviction led Avneesh Chhabra, M.D., associate professor of radiology and chief of the Musculoskeletal Imaging Division at the time of this publication, to leave Johns Hopkins University School of Medicine for UT Southwestern. One of the world's leading experts in sports and peripheral nerve imaging, Chhabra's division frequently collaborated with the department's imaging scientists to develop new techniques to diagnose and treat a variety of musculoskeletal conditions.

"I was offered the chief position to build an exceptional clinical, teaching, and research service," Chhabra said. "Following what M.K. Gandhi stated, 'Live as if you were to die tomorrow and learn as if you were to live forever,' I made the bold and right move to pursue my vision and passion at UT Southwestern."



2016

Plans are announced to add a third hospital bed tower to Clements University Hospital to accommodate the growing needs of patients.

Rofsky compared radiologists to air traffic controllers. While pilots receive glory for their actions, nothing could happen without air traffic control. Similarly, without radiologists, other specialists would be in the dark on where disease or injury is causing bodily distress.

“Superb interpretations and great consultations make us vital partners,” Rofsky said. “Our translational emphasis relies upon the close interactions of radiologists, imaging scientists, information technology specialists, and collaborating physicians — all leveraging the state-of-the-art, evolving technologies that are abundantly situated throughout our campus. We are currently in one the most exciting times in our department’s history, with unprecedented expansion and opportunity that mirror the growth and opportunity afforded by the Dallas-Fort Worth area.”

From its humble beginnings in makeshift quarters, UT Southwestern Medical Center has evolved into a top-tier medical center of unique distinction. It is now home to more than 2,000 distinguished scientists, physicians, and allied health professionals; 4,000 outstanding trainees; and more than 12,000 talented and dedicated employees. With more active Nobel Prize recipients than any other medical school in the world and over half of the medical members of the National Academy of Sciences and National Academy of Medicine (formerly the Institute of Medicine) in the Southwest region, UT Southwestern was positioned to lead the way through a new era of medical care and discovery.

Simultaneously, the radiology department had grown from a department of one to a prestigious department of more than 160 clinical and research faculty, 89 residents and fellows, and more than 100 support staff. At the time of the department’s 60th anniversary, over 1 million inpatient and outpatient imaging exams were performed at the medical center. Offering state-of-the-art radiology services for patients with simple or complex medical conditions, demonstrated again and again Rofsky’s mission “to grow and sustain a world-class department, characterized by its ability to translate innovations in imaging, information technologies and image-guided therapies to optimize patient outcomes.”

RADIOLOGY DIVISION CHIEFS

					
<i>Julia Fielding, M.D.</i> ABDOMINAL IMAGING	<i>Ivan Pedrosa, M.D.</i> BODY MAGNETIC RESONANCE	<i>Phil Evans, M.D.</i> BREAST IMAGING	<i>Subny Abbata, M.D.</i> CARDIOTHORACIC IMAGING	<i>Cecelia Brewington, M.D.</i> COMMUNITY RADIOLOGY	<i>Ron Peshock, M.D.</i> IMAGING INFORMATICS
					
<i>Jon Anderson Ph.D.</i> MEDICAL PHYSICS	<i>Avneesh Chhabra, M.D.</i> MUSCULOSKELETAL IMAGING	<i>Joseph Maldjian, M.D.</i> NEURORADIOLOGY	<i>Rathana Subramaniam, M.D., Ph.D., M.P.H.</i> NUCLEAR MEDICINE	<i>Nancy Rollins, M.D.</i> PEDIATRIC RADIOLOGY	<i>Sanjeeva Kalva, M.D.</i> VASCULAR AND INTERVENTIONAL RADIOLOGY

RADIOLOGY LEADERSHIP

	EXECUTIVE LEADERSHIP COMMITTEE	
<i>Neil M. Rofsky, M.D.</i> CHAIR		
		
<i>Dan Crawley, M.B.A.</i> DEPARTMENT ADMINISTRATOR	<i>Robert Lenkinski, Ph.D.</i> VICE CHAIR OF RESEARCH	<i>John Leyendecker, M.D.</i> VICE CHAIR OF CLINICAL OPERATIONS
		
<i>Ron Peshock, M.D.</i> VICE CHAIR OF INFORMATICS	<i>Diane Twickler, M.D.</i> VICE CHAIR OF ACADEMIC AFFAIRS	<i>Allen Smith</i> REVENUE CYCLE MANAGER

HOSPITAL LEADERSHIP	
	
<i>John Barr, M.D.</i> CHIEF RADIOLOGY OFFICER, PARKLAND HEALTH & HOSPITAL SYSTEM	<i>Cecelia Brewington, M.D.</i> CHIEF RADIOLOGY OFFICER, UT SOUTHWESTERN HOSPITALS & CLINICS
	
<i>Michael Medina</i> ASSOCIATE VICE PRESIDENT OF CLINICAL ANCILLARY SERVICES, UT SOUTHWESTERN HOSPITALS & CLINICS	<i>Nancy Rollins, M.D.</i> CHIEF RADIOLOGY OFFICER, CHILDREN'S HEALTH





ENDOWED PROFESSORSHIPS & CHAIRS

ENDOWED FACULTY PROFESSORSHIPS AND CHAIRS are the highest academic award that a university can bestow on a faculty member. They are essential for recruiting and retaining faculty of the highest caliber. The Department of Radiology's endowed faculty positions have enabled the department to recognize its best minds, its most creative researchers, and its most engaged teachers.

THE M.R. & E. HUDSON FOUNDATION PROFESSORSHIP IN RADIOLOGY IN HONOR OF EDWARD E. CHRISTENSEN, M.D., was created as a tribute to Edward Christensen, M.D., the department's first residency training director, and with a goal of improving resident education, which aligned with Hudson Foundation's areas of interest: education, and medical and scientific research. George Curry, M.D., held the position from 2001 to 2011, followed by David Chason, M.D., who received the appointment in 2012.



George Curry



Edward
Christensen



David Chason



ENDOWED PROFESSORSHIPS & CHAIRS



Phil Evans

THE GEORGE AND CAROL POSTON PROFESSORSHIP IN BREAST CANCER RESEARCH *was established to honor George Poston — a leading real estate executive in Dallas — and his wife, Carol. Alongside other notable accomplishments and service to charitable entities, George Poston served as director for several cultural boards, and, in 1990, was appointed an honorary consular officer for the state of Texas to France. The professorship was endowed through various fundraising efforts for cancer research. James Huth, M.D., held the position from 1994 to 1996, followed by Marilyn Leitch, M.D., who held the position from 1997 to 1999. David Euhus, M.D., held the position from 1999 to 2003, followed by Phil Evans, M.D., who held the position from 2003 to 2013.*



Robert Lenkinski

THE JAN AND BOB PICKENS DISTINGUISHED PROFESSORSHIP IN MEDICAL SCIENCE, IN MEMORY OF JERRY KNIGHT RYMER AND ANNETTE BRANNON RYMER AND MR. AND MRS. W.L. PICKENS *was established by Robert H. Pickens and his wife, Jan, to support endeavors in medical science and to honor their parents. Patrick Clagett, M.D., held the position from 1996 to 2011, and Robert Lenkinski, Ph.D., received the appointment in 2012.*



ENDOWED PROFESSORSHIPS & CHAIRS



Jane and Charles Y.C. Pak, flanked by their children, Laura and Gregory

THE WECHUN PAK PROFESSORSHIP OF BONE BIOPHYSICS was created in 1994 by Charles Y.C. Pak, M.D., to honor his mother and to advance research into bone disorders. Through her career as a midwife in Korea, Wechun Pak inspired her son to alleviate human suffering. She eventually developed osteoporosis, which moved Dr. Pak to conduct research into prevention and treatment of the condition. Peter Antich, Ph.D., held the position from 1994 to 2011, followed by Orhan Öz, M.D., Ph.D., who received the appointment in 2011.



Peter Antich



Orhan Öz

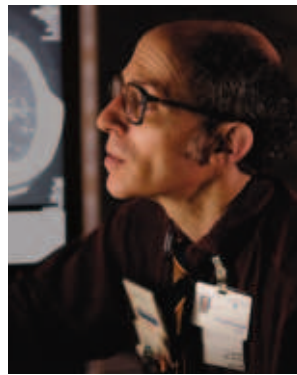
THE CHARLES A. AND ELIZABETH ANN SANDERS CHAIR IN TRANSLATIONAL RESEARCH was created by Charles Sanders, M.D, and his wife, Elizabeth Ann, to support endeavors in translational research. Richard Auchus, M.D., Ph.D, held the chair from 2008 to 2011, followed by Robert Lenkinski, Ph.D., who received the appointment in 2012.



ENDOWED PROFESSORSHIPS & CHAIRS



Jack Reynolds



Michael Landay



Ivan Pedrosa

THE JACK REYNOLDS, M.D. CHAIR IN RADIOLOGY was created by former radiology residents and medical students to honor Jack Reynolds, M.D., who was recognized throughout his career as a talented and effective teacher, with a goal of enhancing the careers of future teachers and the education of radiology residents and medical students. Michael Landay, M.D., held the chair from 2001 to 2012, followed by Ivan Pedrosa, M.D., who received the appointment in 2012.



Charles Sprague

THE CHARLES CAMERON SPRAGUE, M.D. CHAIR IN MEDICAL SCIENCE was established in 1988 with gifts from various donors and matching institutional funds to honor UT Southwestern's first president, Charles Sprague, M.D., who was considered a visionary leader, outstanding physician and dynamic teacher. Robert McKenna, M.D., held the chair from 1998 to 2000, followed by Nancy Rollins, M.D., who received the appointment in 2004.



Nancy Rollins



ENDOWED PROFESSORSHIPS & CHAIRS

THE EFFIE AND WOFFORD CAIN DISTINGUISHED CHAIR IN DIAGNOSTIC IMAGING

was created by the Cain Foundation, an organization that supports Texas educational institutions, public charities, civic organizations, and medical research programs.



Effie Cain



Wofford Cain

The chair was established to fund cutting-edge research and clinical care. Frederick Bonte, M.D., held the chair from 1990 to 1994, followed by Robert Parkey, M.D., who held the position from 1994 to 2010, and Neil M. Rofsky, M.D., who received the appointment in 2010.



Frederick Bonte



Robert Parkey



Neil M. Rofsky



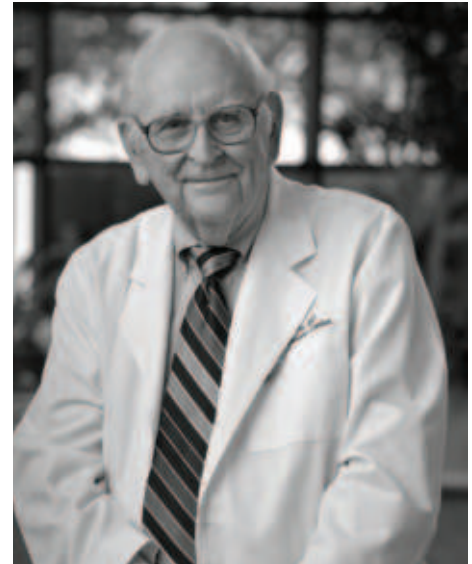
ENDOWED PROFESSORSHIPS & CHAIRS



Jack Krohmer

THE DR. JACK KROHMER PROFESSORSHIP IN RADIATION PHYSICS

was created through a gift from Robert Sanford, former president of Gilbert X-Ray Company, and his wife, Lola, to honor Jack Krohmer, Ph.D., who founded the Nuclear Medicine Division and established one of the first laboratories for nuclear medicine in the Southwest. Frederick Bonte, M.D., held the position from 1994 to 2012, followed by Xiankai Sun, Ph.D., who received the appointment in 2012.



Frederick Bonte



Xiankai Sun



ENDOWED PROFESSORSHIPS & CHAIRS



Helen Redman



Diane Twickler



Frederick Bonte

THE DR. FRED BONTE PROFESSORSHIP IN RADIOLOGY was established by former Gilbert X-Ray Company president Robert Sanford and his wife, Lola, to support the work of the department and to honor its first chair, Frederick Bonte, M.D. Helen Redman, M.D., held the position from 1994 to 2000, followed by Diane Twickler, M.D., who received the appointment in 2000.

THE ROBERT W. PARKEY, M.D. DISTINGUISHED PROFESSORSHIP IN RADIOLOGY was created to honor Robert Parkey, M.D., at the time of his retirement from UT Southwestern. Gifts to establish the

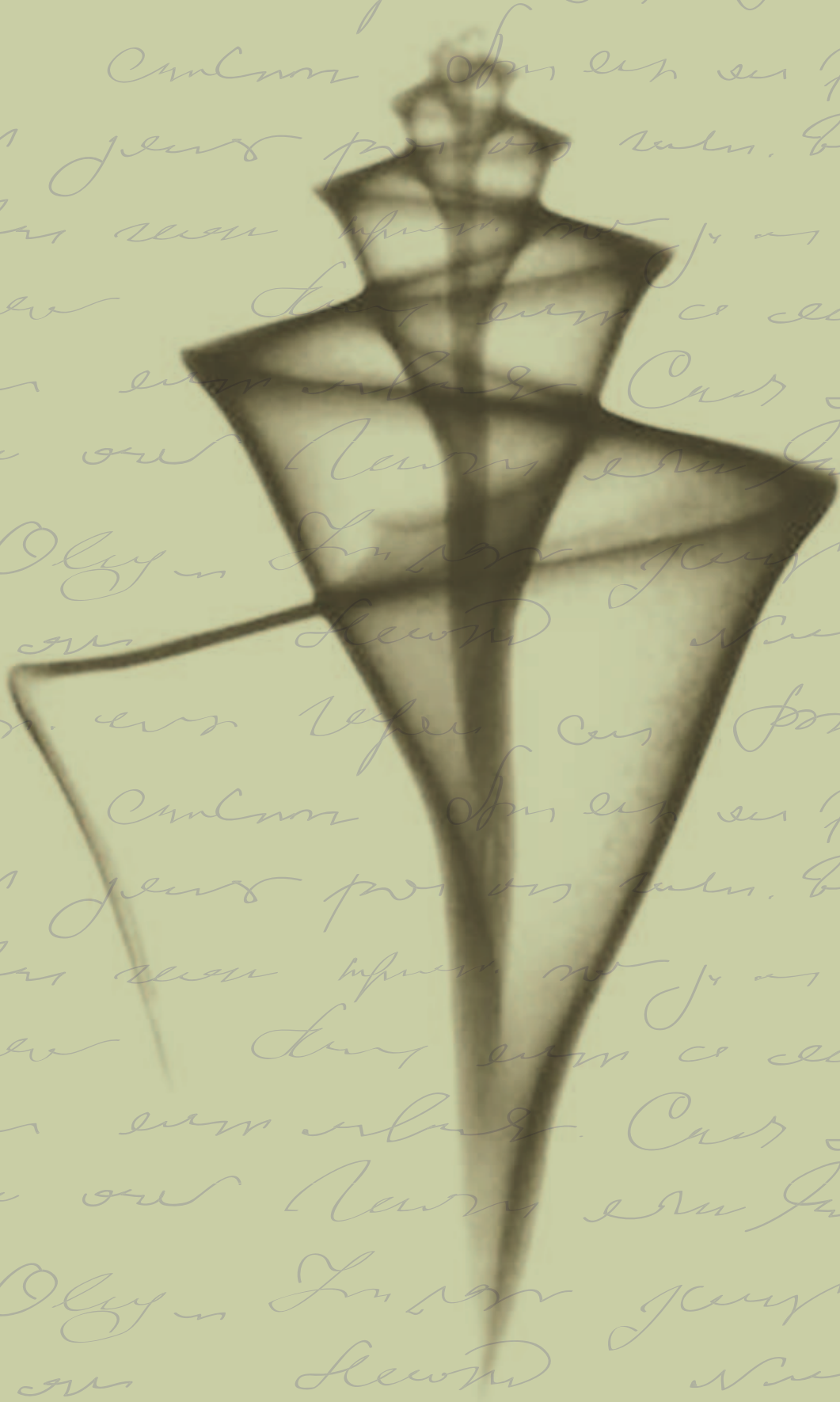


Rathana Subramaniam

professorship were received from friends, colleagues, and supporters, ensuring the position would be a lasting tribute to Dr. Parkey, who served as department chair for more than three decades. Rathana Subramaniam, M.D., Ph.D., M.P.H., became the inaugural holder of the position in 2016.



Robert Parkey





AUTHOR'S NOTES

The source materials I relied on to write this publication took me to the UT Southwestern Archives; the UT Southwestern Office of Communications, Marketing, and Public Affairs; the Dallas Public Library; the Dallas County Medical Society; and through boxes of scattered historical materials.

UT SOUTHWESTERN MEDICAL CENTER PUBLICATIONS

AND AFFILIATED PUBLICATIONS CITED:

Center Times: The official newspaper of UT Southwestern Medical Center

Southwestern Medicine: UT Southwestern's annual magazine/annual report

BioLogue: A past publication of the Office of Medical Information

The Newsletter: Published by UT Southwestern from 1970 to 1976

Southwestern Medical Perspectives: Publication of the Southwestern Medical Foundation

I ALSO CONDUCTED INTERVIEWS WITH THE FOLLOWING:

Suhny Abbara, M.D.	William Hendee, Ph.D.	Ron Peshock, M.D.
Jon Anderson, Ph.D.	C. Wallace Hooser, M.D.	Phil Purdy, M.D.
Dinah Barrilleaux	Sanjeeva Kalva, M.D.	Lee Radford, M.D.
Robert Berk, M.D.	Michael Landay, M.D.	Neil M. Rofsky M.D.
Frederick Bonte, M.D.	Robert Lenkinski, Ph.D.	Nancy Rollins, M.D.
Cecelia Brewington, M.D.	John Leyendecker, M.D.	Dean Sherry, Ph.D.
Julie Champine, M.D.	Craig Malloy, M.D.	Dorothy Smith
Curtis Chaney	Ralph Mason, Ph.D.	Xiankai Sun, Ph.D.
Avneesh Chhabra, M.D.	Dana Mathews, Ph.D.	Diane Twickler, M.D.
Dolly Christensen	Michael Medina	Ernest Stokely, Ph.D.
Judy Cooper, Ph.D.	Ann Mootz, M.D.	Paul Weatherall, M.D.
Irene Delgado	Mary Ann Mullican, M.D.	Jeffrey Weinreb, M.D.
Irma Dobbins	Orhan Öz, M.D., Ph.D.	Lori Watumull, M.D.
William Erdman, M.D.	Robert Parkey, M.D.	Kern Wildenthal, M.D., Ph.D.
Phil Evans, M.D.	Ivan Pedrosa, M.D.	



AUTHOR'S NOTES

CHAPTER ONE: A WONDROUS DISCOVERY

1. Davis Spangler, M.D., "Final Message From Retiring President"
Dallas Medical Journal (January 13, 1944).
2. "In Memoriam James Madison Martin, M.D. 1867-1947" *Radiology* 50.1 (1948).
3. A.J. Gill, M.D., "The University Southwestern" *The New Physician* (April 1957).
4. Tom Bond, M.D. "Historian Report Texas Radiological Society" (January, 1965).
5. "Letter to Dr. Jack Reynolds" by Charles Martin, M.D. (February 3, 1975).
6. "Portraits in Radiology: Charles L. Martin, M.D." *Applied Radiology* (1980).
7. "History Special Edition: UT Southwestern Celebrating The First Fifty Years: 1943-1993" *Center Times* (1993).
8. Reyes Abila, "Graduate Provides Memories" *Center Times* (1994).
9. James King, "UT Southwestern: From Army Shacks to Research Elites" *Science* (November, 1996).
10. Frederick Bonte, M.D., "History of the Department of Radiology" *Selected Recollections of The University of Texas Southwestern Medical School, Dallas, Texas*, compiled by George Race, M.D., Ph.D. (1997).
11. James Robinson, M.D., "Department of Radiology" by *Selected Recollections of The University of Texas Southwestern Medical School, Dallas, Texas*, compiled by George Race, M.D., Ph.D. (1997).
12. *1894 Into The Future: A Special Issue of Highlights, Celebrating More Than 100 Years at Parkland*, edited by April Foran (2002).
13. Herbert L. Steinbach, M.D., "History of the Department of Radiology at Baylor University Medical Center Proceedings" *Proceedings* (Baylor University Medical Center) 2004, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1200684/>.
14. Peter Riesz, M.D. *Texas Radiological Society: A Centennial History* (2012).
15. "75 Years of Vision: The Lasting Gift of Southwestern Medical Foundation" *Perspectives Magazine*, edited by Kim Brayton (Spring, 2014).
16. "Chronology of Campus Names for UT Southwestern Medical Center" UT Southwestern Health Sciences Digital Library and Learning Center (May 1, 2014), http://libraryutsouthwestern.edu/speccol/archives/chron_of_utswh_campus_names.pdf.
17. Bill Maina "St. Paul Historical Timeline" UT Southwestern Health Sciences Digital Library and Learning Center (June 12, 2014).
18. "History" UT Southwestern Medical Center, online at <http://www.utsouthwestern.edu/about-us/mission-history/index.html>.
19. "Mission & History: 1943–1959" UT Southwestern Medical Center, available online at <http://www.utsouthwestern.edu/about-us/mission-history/1943-1959.html>.



AUTHOR'S NOTES

CHAPTER TWO: GROUNDBREAKERS, GROWTH AND GRASSHOPPERS

1. "Western Reserve Graduate Is Named to Medical Post" *The Dallas Morning News* (October 18, 1956).
2. "New Atomic Tools to Aid Parkland's Disease Fight" *Dallas Times Herald* (1956).
3. "A Medical 'Atomic' War" *Southwestern Medical Foundation News* (Winter, 1957).
4. Carleton Chapman, M.D., Orland Baker, M.D., Jack Reynolds, M.D., Frederick Bonte, M.D., "Use of Biplane Cinefluorography for Measurement of Ventricular Volume" *Circulation, Volume XVIII*, (1958).
5. Frederick Bonte, M.D. and Jack Reynolds, M.D., "Hydrocarbon Pneumonitis" *Radiology* (1958).
6. "Cobalt Given to School" *The Dallas Morning News* (July 28, 1961).
7. "Women Organize NOW Chapter Here" *The Dallas Morning News* (July 18, 1972);
8. Sharon Cobler, "Adrenalin Sparks Active Professor" *The Dallas Morning News* (November 2, 1975).
9. "Letter to John Moore, Department of Radiology" by Frederick Bonte, M.D. (June 10, 1982).
10. Jenni Beauchamp, "Mary Esther Gaulden Jagger — Life a 'Great Adventure' for Biologist, Author" *The Dallas Morning News* (September 9, 2007).
11. Joe Simnacher, "Reynolds — A Top Professor of Radiology" *The Dallas Morning News* (September 30, 2007).
12. "An interview with William Hendee, Ph.D." The American Society for Radiation Oncology (ASTRO) (2013) <https://www.astro.org/About-ASTRO/Society-History/History-Interviews/An-interview-with-William-Hendee,-PhD.aspx>.
13. "Letter to Mr. and Mrs. Robert Sanford" by Frederick Bonte, M.D. (January 15, 2015).
14. "1940: Texas Children's Hospital — Comprehensive Care for Older Children" *Children's Health History*, <https://www.childrens.com/footer/aboutsection/about/history/nineteen-fourty>.
15. "Mission & History: 1960–1979" UT Southwestern Medical Center, <http://www.utsouthwestern.edu/about-us/mission-history/1960-1979.html>.
16. "Building a Reputation for Excellence" UT Southwestern Medical Center, <http://www.utsouthwestern.edu/about-us/mission-history/1960-1979.html>.

CHAPTER THREE: GAINING MOMENTUM, ACHIEVING RENOWN

1. The University of Texas Southwestern Medical School at Dallas (June 11, 1971). Two medical scientists from The University of Texas Southwestern Medical School at Dallas have been named picker scholars by the National Research Council [press release].



AUTHOR'S NOTES

2. The University of Texas Southwestern Medical School at Dallas (October 8, 1971). Dr. Frederick J. Bonte, Professor and Chairman of Radiology at the University of Texas Southwestern Medical School, Has Been Named to the Nation's Newest Medical Specialty Board, the American Board of Nuclear Medicine [press release].
3. The University of Texas Health Science Center at Dallas (March 16, 1973). Dr. Frederick J. Bonte, Chairman of the Department of Radiology at the University of Texas Southwestern Medical School Since 1956, Will Become Dean of the School on April 1 [press release].
4. "Fred Bonte Appointed Dean of UT Southwestern Med" *The Newsletter*, The University of Texas Health Science Center at Dallas, (April, 1973).
5. The University of Texas Health Science Center at Dallas. (January 19, 1974). For the First Time, Doctors Are Able to See the Exact Area of Damage Caused by a Coronary Heart Attack [press release].
6. "Cardiac Scanner Readied" *The Dallas Morning News* (January 20, 1974).
7. The University of Texas Health Science Center at Dallas. (August 12, 1974). Robert N. Berk, M.D., to head radiology at UT Southwestern Medical School [press release].
8. Thomas S. Curry, III, James E. Dowdey, and Robert C. Murry, Jr., *Christensen's Introduction to the Physics of Diagnostic Radiology* Third Edition (1984).
9. "Gold Medalists, Honorary Members, Pioneer Session, Abstracts" *Pediatric Radiology* 25 (1995).
10. Kris Mullen, "Shaping the Past, Present & Future of Medicine in Dallas" *Southwestern Medical Perspectives* (Spring 1999).
11. "Audiotaped Interview of Dr. Frederick Bonte" Southwestern Chapter of the Society of Nuclear Medicine and Molecular Imaging (December 16, 2004)
<http://swc-snmml.org/>
12. UT Southwestern Medical Center NEWS. (September 19, 2005). Dr. Charles Sprague, first president of UT Southwestern, remembered for his visionary leadership [press release].
13. "In Memoriam: Dr. Guido Currarino, Noted Pediatric Radiologist" *Center Times* (2016).
14. "1960: Joining Forces within an Academic Medical Center" Children's Health History, <https://www.childrens.com/footer/aboutsection/about/history/nineteen-sixty>.

CHAPTER FOUR: INNOVATIONS AND EXPANSION

1. "Bonte Library Dedicated" *The Newsletter*, The University of Texas Health Science Center at Dallas (August, 1976).
2. The University of Texas Health Science Center at Dallas. (September 21, 1976). Diagnoses aided by new ultrasound lab [press release].
3. The University of Texas Health Science Center at Dallas. (May 12, 1976). 1976 Piper Professorship Awarded to UT Health Science Center Radiology Professor [press release].



AUTHOR'S NOTES

4. "Outstanding Teaching Abilities Win Reynolds Piper Professorship" *The Newsletter*, The University of Texas Health Science Center (July, 1976).
5. "Letter to Morris Ziff, M.D." by Robert Berk (November 8, 1976).
6. The University of Texas Health Science Center at Dallas. (March 25, 1977). Expert urges greater caution in x-raying potential mothers [press release]
7. "Embryonic Damage Caused By Wrong Use of X-Ray" *Daily News* (April 30, 1977).
8. "Letter to Robert Heath" by Robert Berk, M.D. (June 9, 1977).
9. William Conner, "Bio-Medical/Medical Diagnostics Companies Face Challenges, Growth Opportunities in Years Ahead" *The Southwest Metroplex* (August, 1977).
10. The University of Texas Health Science Center at Dallas. (August 17, 1977). Southwestern Medical School names internationally recognized researcher chairman of Radiology Department [press release]
11. "Dr. Parkey Assumes Radiology Chairmanship" *Center Times* (1977).
12. The University of Texas Health Science Center at Dallas (November 8, 1977). UT Southwestern Researchers Develop New Techniques for Monitoring Heart [press Release].
13. "WAG Pays Tribute to Women of Action" *Center Times* (1978).
14. The University of Texas Health Science Center at Dallas. (December 12, 1979). Health care threatened by nuclear confusion and disposal problems [press release].

CHAPTER FIVE: NEW TECHNOLOGIES, NEW TECHNIQUES

1. "Bonte to Step Down" *Dallas Times Herald* (March 1, 1980).
2. "Bonte to Resign Med School Post, Will Head Nuclear Medicine Center" *Center Times* (1980).
3. "Nuclear Medicine Center Planned" *The Dallas Morning News* (February 28, 1980).
4. "Wildenthal Named New Med School Dean" *Center Times* (1980).
5. "Bonte Heads Medical Society" *Center Times* (1980).
6. "Dr. Edward Christensen, Medical Professor, Dies" *Dallas Times Herald*, (December 22, 1980).
7. Jack Reynolds, M.D., "Edward E. Christensen, M.D., F.A.C.R." *Radiology* (June, 1981).
8. Linda Little, "Super-Conducting Magnets Attract Attention of Radiologist" *The Dallas Morning News* (September 6, 1981).
9. The University of Texas Health Science Center at Dallas. (May 28, 1981). UT nuclear medicine center gets sophisticated brain scanner [press release].
10. Joann Schulte, "Scanner May Provide Stroke Warning: Computerized Photos Spot Brain Areas Not Getting Enough Oxygen" *The Dallas Morning News* (November 17, 1981).
11. Joann Schulte, "Medical Tool Promises Faster Diagnoses" *The Dallas Morning News* (January 10, 1982).



AUTHOR'S NOTES

12. Joann Schulte, "Scanning the Brain for Trouble: Color Pictures Help Diagnose Disorders" *The Dallas Morning News* (October 24, 1982).
13. Joann Schulte, "Alternatives to X-Rays Offer Better, Safer Looks Into Body" *The Dallas Morning News* (November 15, 1982).
14. Brad Bailey, "Leanderthal Woman Enchants Scientists" *The Dallas Morning News* (May 31, 1983).
15. Full-Body NMR Scanner Utilizes Harmless Magnetic, Radio Waves" *Dallas Times Herald* (August 7, 1983).
16. The University of Texas Health Science Center at Dallas. (October 20, 1983). Nuclear magnetic resonance to be featured at radiology seminar [press release].
17. "Body Imaging Unlocks Mysteries" *Center Times* (1983).
18. Jamie Friar, "The Better To See Your Brain" *BioLogue* (1983).
19. "New Techniques Aid In Treatment of Hypertension" *Center Times* (1984).
20. Carol Floyd, "Master of the Game: Reynolds Elected SMS Outstanding Teacher of the Year" *Center Times* (1985).
21. Susan Rutherford, "Magnetic Resonance Imaging" *BioLogue* (1986).
22. Pamela Lyon, "An Institution Comes of Age" *BioLogue* (1986).
23. "Letter to Sidney Wallace, M.D." by Robert Parkey, M.D. (October 28, 1991).
24. Kris Mullen, "Radiologist Sees What X-Ray's Inventor Could Only Imagine" *Center Times* (1995).
25. Joe Simnacher, "Ralph Rogers, 87, Dies" *Dallas Morning News* (November 5, 1997).
26. Rachel Skei Donihoo, "Hudson Foundation Donation Honors Christensen" *Center Times* (2001).
27. The University of Texas Health Science Center at Dallas Magnetic Resonance Imaging [Brochure].
28. Magnetic Resonance Research...Developing the Ultimate Tool, American Heart Association Dallas Division [Brochure].
29. "Charles C. Sprague, M.D." UT Southwestern Medical Center, <http://www.utsouthwestern.edu/about-us/office-of-the-president/leaders/sprague.html>;
30. "Mission & History: 1980-1999" UT Southwestern Medical Center, <http://www.utsouthwestern.edu/about-us/mission-history/1980-1999.html>.

CHAPTER SIX: TAPPING THE POTENTIAL

1. Office of Medical Information The University of Texas Health Science Center at Dallas. (May 25, 1984). UTHSCD to dedicate outpatient facility June 1 [press release].
2. Office of Medical Information The University of Texas Southwestern Medical Center at Dallas. (February 19, 1986). Southwestern Medical School's first graduate retires [press release].
3. Office of Medical Information The University of Texas Science Center at Dallas. (December 5, 1985). UTHSCD's nuclear magnetic resonance center receives funding for research in body metabolism [press release].



AUTHOR'S NOTES

4. Office of Medical Information The University of Texas Health Science Center at Dallas. (March 10, 1986). Hughes Institute to establish major biomedical research laboratories at UTHSCD [press release].
5. Office of Medical Information The University of Texas Health Science Center at Dallas. (May 22, 1987). Southwestern Medical School graduates 5000th student [press release].
6. Office of Medical Information The University of Texas Science Center at Dallas. (July 29, 1987). Magnetic resonance spectroscopy scans body metabolism [press release].
7. Joe Simmacher, "UT Medical School Gets 30-Acre Donation — Southwestern Plans \$4.8 Million Structure" *The Dallas Morning News* (December 16, 1987).
8. "Interoffice Memorandum to Rick Hoffman" by George Curry, M.D. (July 20, 1988).
9. Office of Medical Information The University of Texas Southwestern Medical Center at Dallas. (April 8, 1987). New use of dye helps MRI locate tiny tumors [press release].
10. Office of Medical Information The University of Texas Southwestern Medical Center at Dallas (November 10, 1988). UT Southwestern initiates campus expansion [press release].
11. Tommy Bosler, "Center Times Special Edition: Room To Grow" *Center Times* (1988).
12. Dottie De La Garza, "Magnetic, Resonant, Imaginative" *Center Times* (1988).
13. Dottie De La Garza, "MRI Ceremony Honors Dallas Philanthropists" *Center Times* (1988).
14. Susan Rutherford, "Major Attraction: Rogers Opening First at North Campus" *Center Times* (1989).
15. Robert Miller, "UT Southwestern Unveils Magnetic Resonance Center" *The Dallas Morning News* (May 4, 1990).
16. The University of Texas Southwestern Medical Center at Dallas. (1993). Looking Toward The Future [Brochure].
17. Steve Garmhausen, "Health Care Heroes 2008: Nancy Rollins" *Dallas Business Journal* (August 1, 2008).

CHAPTER SEVEN: BUILDING ON SUCCESS

1. Susan Rutherford, "Ultrasonic Bone Scanning Device" *BioLogue* (1987-1988).
2. Robert Miller, "Magnets Will Draw Dallas Closer to World Medical Status" *The Dallas Morning News* (June 7, 1989).
3. Susan Rutherford, "Zale Lipshy Angiography Technology Spurs Neurology, Radiology Teams" *Center Times* (1990).
4. "Major Attraction: MRI Installation Photo" *Center Times* (February, 1990).
5. Susan Rutherford, "MRI Research Targets Muscle Recuperation" *Center Times* (1990).
6. Lynn Gentry, "MR Technology Using Animals Providing Clues to Cardiac Damage" *Center Times* (1990).



AUTHOR'S NOTES

7. Susan Rutherford, "Zale Lipshy Angiography Technology Spurs Neurology, Radiology Teams" *Center Times* (1990).
8. Susan Rutherford, "Zale Lipshy Hospital Turns One" *Center Times* (1990).
9. David Doremus, "Ultrasound Scanner Proving Effectiveness of Osteoporosis Drug" *Center Times* (1991).
10. Rochelle Riley, "Medical Center Plans Expansion" *The Dallas Morning News* (December 5, 1991).
11. Kay Johnson, "Patient Testing to Begin for New, High-Speed MRI Device" *Center Times* (1992).
12. Kay Johnson, "Newly Licensed Imaging Device Shows Anatomy at Work" *Center Times* (1992).
13. "Radiologists Go Shark Hunting" *Center Times* (1992).
14. "Brain Blood Flow Imaging Promising in Alzheimer's Diagnosis" by Ann Harrell, *Southwestern News* (December 4, 1992).
15. "New Medical Imaging Device Developed by Dallas Researchers" by Kay Johnson, *Southwestern News* (January 22, 1993).
16. "Frederick J. Bonte, M.D., Honored With Max Cole Leadership Award" *Dallas Business Journal* (February 1993).
17. *Southwestern News* The University of Texas Southwestern Medical Center at Dallas. (February 23, 1993). Medical center faculty honored [press release].
18. "Letter to Frederick Bonte, M.D." by Ralph Rogers (March 18, 1994).
19. Shanna Swendson, "MRI Unit Marks 10 Years: Radiologists at Forefront of Advancing Technology" *Center Times* (1994).
20. Emily Martinez, "Stroke Study to Test New Drug Therapy" *Center Times*, (1994).
21. *Southwestern News* The University of Texas Southwestern Medical Center at Dallas. (December 7, 1994). Sanfords endow two radiology professorships at UT Southwestern [press release].
22. William Hendee, Ph.D., "In Memoriam: Jack Stewart Krohmer, Ph.D." *Radiology* (2001).
23. Matt Crenson, "X-Ray Visions – Doctors Fast to Find Uses for New Rays" *The Dallas Morning News* (October 30, 1995).
24. "Stroke of Genius" Southwestern Medical Foundation, <http://swmedical.org/archives/230>.
25. Bill Maina, "Zale Lipshy University Hospital Historical Timeline" UT Southwestern Health Sciences Digital Library and Learning Center (December 10, 2008).

CHAPTER EIGHT: MILESTONES AND MEDICAL MARVELS

1. "Radiology's 100th Anniversary" American College of Radiology Bulletin (June 1995).
2. Kris Mullen, "New MRI Equipment Offers Faster More Accurate Scans" *Center Times* (1995).
3. *Southwestern News* The University of Texas Southwestern Medical Center at Dallas. (June 13, 1995). New Magnetic Imaging Equipment Enhances Treatment [press Release].
4. Emily Martinez, "Surgeons Use Microcoils to Aid Patients With Brain Aneurysms" *Center Times* (1995).
5. "MRI Measure Coronary Arterial Flow" *Center Times* (1996).
6. Robert Miller, "Baylor Specialist to Head UT Center for Breast Care" *The Dallas Morning News* (July 21, 1996).



AUTHOR'S NOTES

7. *Southwestern News* The University of Texas Southwestern Medical Center at Dallas. (November 19, 1996). New Assistant Dean to head informatics at UT Southwestern [press release].
8. *Southwestern News* The University of Texas Southwestern Medical Center at Dallas. (March 7, 1997). UT Southwestern Radiologist Honored for Longtime Contributions to Nuclear Medicine [press release].
9. "Doctors Group Honors Nuclear Work by Bonte" *Center Times* (1997).
10. Emily Martinez, "Zale Lipshy Neuroangiography Unit, Surgeons Attract Patients Worldwide" *Center Times* (1997).
11. Kris Mullen, "Redman Chosen As One of 20 Most Influential Radiologists" *Center Times* (1997).
12. "The Dallas Heart Study Description" UT Southwestern Medical Center.
13. "Widow Funds Med Center Surgery Chair" *Park Cities People* (December 17, 1998).
14. Rachel Skei Donihoo, "Woolf Gift Memorializes Dallas Neurosurgeon" *Center Times* (1998).
15. Kris Mullen, "Aston Radiology Clinic Updates Image" *Center Times* (1998).
16. Mindy Baxter, "Latest Technology Adds New Dimension to Ultrasound Pictures" *Center Times* (1999).
17. Mindy Baxter, "Medical Center Purchases 50 More Acres" *Center Times* (1999).
18. Heather Stieglitz, "New Directions in Medicine" *Southwestern Medical Perspectives* (Spring 2000).
19. Mindy Baxter, "Radiology Societies Award Gold Medals to Redman Before Her Death March 14" *Center Times* (2000).
20. Kathleen Ward, M.D., "Helen C. Redman, A Woman of Distinction" *American Association for Women Radiologists: Focus* (Spring 2000).
21. C. Douglas Maynard, M.D., "In Memoriam: Dr. Helen C. Redman" *Radiology* (August, 2000).
22. Mike Blackman, "The Addition of St. Paul Adds to the Mosaic of Care at UT Southwestern" *Southwestern Medical Perspectives* (Spring/Summer 2001).
23. Mindy Baxter, "Gifts Create Chair Named for Professor of 44 Years" *Center Times* (2001).
24. Wayne Carter, "Evans Named Director of Breast Imaging" *Center Times* (2002).
25. Michael Blackman, "Incredible Medical Machines" *Southwestern Medicine* (2002).
26. Wayne Carter, "Study to Compare Digital Mammography With Old Screen-Film Method" *Center Times* (2002).
27. Rachel Horton, "Stroke Signals" *Southwestern Medicine* (2003).
28. *Southwestern News* The University of Texas Southwestern Medical Center at Dallas. (December 22, 2004). UT Southwestern Medical Center Acquires Zale Lipshy, St. Paul University Hospitals [press Release].



AUTHOR'S NOTES

29. "Maternal-Fetal Medicine: Treatment for High-Risk Patients" *UT Southwestern Med Physician Update* (2012).
30. Kristen Holland Shear, "Radiologists' 'Case of the Week' Was Once a Gold-Star Opportunity" *Center Times* (2008).
31. Ruth E. McBurney, CHP, and Joel O. Lubenau, CHP, "In Memoriam: Greta Joy Dicus" Health Physics Society (August 13, 2014) <http://hps.org/aboutthesociety/people/inmemoriam/GretaDicus.html>.
32. "Mission & History — 2000 and Beyond" UT Southwestern Medical Center, available at <http://www.utsouthwestern.edu/about-us/mission-history/2000-beyond.html>.

CHAPTER NINE: COLLABORATION AND COOPERATION

1. Scott Maier, "CT Scanner Offers Comfort, Clearer Images" *Center Times* (2004).
2. Southwestern News The University of Texas Southwestern Medical Center at Dallas. (October 27, 2004). UT Southwestern features only Breast Care Center in region with dedicated MRI technology [press release].
3. Scott Maier, "Breast Care Center Buys MRI System" *Center Times* (2005).
4. Katherine Morales, "A Look Inside" *Southwestern Medicine* (2005).
5. Jan Jarvis, "Study Touts the Value of Digital Mammography" *Fort Worth Star-Telegram* (September 17, 2005).
6. Toni Heinzl, "Digital Mammograms Prove More Effective Than Conventional Films" *Center Times* (2005).
7. Katherine Morales, "Congress Oks \$7 Million for Powerful MRI" *Center Times* (2006).
8. UT Southwestern Medical Center NEWS. (February 9, 2006). New Advanced Medical Imaging Building at UT Southwestern Named for Bill and Rita Clements [press release].
9. Katherine Morales, "Bonte, Radiology Sharing 50-Year Celebration" *Center Times* (2006).
10. UT Southwestern Medical Center NEWS. (October 6, 2006). UT Regents and UT Southwestern dedicate new Bill and Rita Clements Advanced Medical Imaging Building [press release].
11. Katherine Morales and Cliff Despres, "Clements Imaging Building Dedicated" *Center Times* (2006).
12. Rachel Skei Donihoo, "Hoblitzelle Foundation Donates \$2 Million for Imaging Research" *Center Times* (2006).
13. Cliff Despres, "UT Southwestern Expanding Metabolic Research Efforts" *Center Times* (2007).
14. Mary Ann Mullican, M.D., "Remembering Our Colleagues" *Texas Radiological Society The View Box* (Winter 2007).
15. UT Southwestern Medical Center NEWS. (March 28, 2008). UT Southwestern offers Metroplex's only automated 3-D breast ultrasound machine [press release].
16. UT Southwestern Medical Center NEWS. (May 13, 2008). Supplement breast ultrasound boosts cancer detection, UT Southwestern radiologist reports in national study [press release].
17. Aleshia Howe, "UT-Arlington Growing Engineering Projects" *Research Texas* (Fall, 2008).



AUTHOR'S NOTES

18. Elizabeth Bassett, "Schools Eye Optical Research" *Fort Worth Business Press* (September 8, 2008).
19. Jan Jarvis, "UTA Engineers Working Closely With Doctors On Designing Medical Technology" *Fort Worth Star-Telegram* (September 14, 2008).
20. Sarah Lamberti, "PET/CT in HD Seeing More, Clearly" *Molecular Imaging Insight* (March, 2008).

CHAPTER TEN: INSPIRED BY EXAMPLE

1. UT Southwestern Medical Center NEWS. (June 12, 2009). Former Gov. Bill Clements makes historic gift to UT Southwestern with \$100 million [press release].
2. UT Southwestern Medical Center NEWS. (May 13, 2008). Supplemental breast ultrasound boosts cancer detection, UT Southwestern radiologist reports in national study [press release].
3. UT Southwestern Medical Center NEWS. (May 29, 2008). Fireflies glow helps UT Southwestern researchers track cancer drug's effectiveness [press release].
4. UT Southwestern Medical Center NEWS. (June 3, 2009). Oxygen + MRI might help determine cancer therapy success, UT Southwestern researchers find [press release].
5. Kristen Holland Shear, "Sherry, Malloy to Tell the Story of Magnetic Resonance Imaging" *Center Times* (2010).
6. UT Southwestern Medical Center NEWS. (June 3, 2010). UT Southwestern unveils next generation CT scanner that views whole organs in a heartbeat, cutting exposure time [press release].
7. Kristen Holland Shear, "Rofsky Named Chairman of Radiology" *Center Times* (2010).
8. Debbie Bolles, "Center for Breast Care Patients Participating in Trials of Newest 3-D Mammography Unit" *Center Times* (2011).
9. UT Southwestern Medical Center NEWS. (November 10, 2011). American Cancer Society installs Dr. Phil Evans, Director of UT Southwestern Center for Breast Care, as President [press release].
10. "New National President of the American Cancer Society" *Dallas Medical Journal* (December, 2011).
11. Debbie Bolles, "Brave New Worlds: High Tech Medicine" *Southwestern Medicine* (2011).
12. "William Kilman, M.D." *The Dallas Morning News* (December 12, 2012).
13. Lin Lofley, "UTSW Medical School Hits Milestone With 70th Class" *Center Times* (2012).
14. Alex Lyda, "Oxygen Decelerates Many Cancer Tumors When Combined With Radiation Therapy" *Center Times* (2013).
15. "Q&A with Dr. Neil Rofsky" UT Southwestern Medical Center, <https://profiles.utsouthwestern.edu/profile/117801/neil-rofsky-qanda.html>.



AUTHOR'S NOTES

CHAPTER ELEVEN: THE NEXT 60 YEARS

1. UT Southwestern Medical Center NEWS. (April 12, 2012). New University Hospital will be named to honor former Gov. William P. Clements Jr. [press release].
2. UT Southwestern Medical Center NEWS. (June 25, 2014). With New Hospital's Distinctive 'W' Design, Form Follows Function — and Function Reflects Vision [press release].
3. "Cyclotron On Track to Become Operational By End of Year" *Cancer Center Bulletin: A Publication of the Harold C. Simmons Cancer Center* (March 2014);
4. UT Southwestern Medical Center NEWS. (October 30, 2014). William P. Clements Jr. University Hospital dedication highlights innovative new facility in Dallas [press release].
5. Jeanne Forbis, Alfred Marucci, Remekca Owens, Russell Rian, Gregg Shields, and Lisa Warshaw, "The Future of Medicine Has a New Home" *Southwestern Medicine* (2014).
6. UT Southwestern Medical Center NEWS. (December 6, 2014). William P. Clements Jr. University Hospital opens [press release].
7. "New Parkland Puts Radiology at Care Provider's Fingertips" Parkland, available online at <http://www.parklandhospital.com/phhs/news-and-updates/new-parkland-puts-radiology-at-care-providers-fing-233.aspx>, (January 14, 2015).
8. "First Patient at New Parkland Thanks Hospital, Staff, Paramedics" Parkland, available online at <http://www.parklandhospital.com/phhs/news-and-updates/first-patient-at-new-parkland-thanks-hospital-staf-462.aspx>.
9. UT Southwestern Medical Center NEWS. (March 18, 2015). New Cyclotron facility expands research opportunities and imaging capabilities for detecting, tracking cancer [press release].
10. UT Southwestern Medical Center NEWS. (October 6, 2015). William P. Clements Jr. University Hospital garners National Quality and Safety Award for Academic Medical Centers [press release].
11. "Facts and Figures" UT Southwestern Medical Center, available online at <http://www.utsouthwestern.edu/about-us/facts.html>.

AFTERWORD

I would like to thank my exceptional husband, Hank Stafford, who made it possible to take on this worthwhile project, and my young daughters, Vivian and Alisha. Thank you UT Southwestern archivist Cameron Kainerstorfer for your help and guidance. Thank you to the Bonte, Parkey, and Christensen families for inviting me into your homes for hours of interviews and to everyone else I spoke to. Thank you editor Jon Garinn and photo illustrator Glenn Katz for believing in me and for your expertise. Finally, thank you designer Janice Pults for helping make this story come to life.

Erin Prather Stafford