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to all of our
alumni.*

*Without their contributions
we would not be
where we are today.*



Through the Years:
A Living History

of the

Indiana University
School of Medicine
Department of Radiology

1906 - 2004



Written by Hester Anne Hale



Edited by Hester Anne Hale
and Susan Overs Wilson

Design by Susan Overs Wilson
Preface by Mervyn D. Cohen, M.B., Ch.B., M.D.



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Contributions from Mervyn D. Cohen, MB., Ch.B., M.D., Valerie P. Jackson, M.D., and other departmental alumni and friends.

PREFACE

During 2003 and 2004 Indiana University School of Medicine celebrated its distinguished 100th birthday. Radiology has been a part of the I.U. School of Medicine almost from its first days. It, therefore, seems appropriate that, at this time, we are publishing this wonderful history of the Radiology Department at Indiana University. The Department has grown from very simple beginnings to becoming one of the largest academic radiology departments in the United States.

This book is first and foremost about people. It is about the wonderful faculty, students and support staff who have worked and served at Indiana University. It is only through the contributions of each and every individual member that the department has grown to achieve national recognition for its clinical care, teaching, research and service. The objective of this book is to thank those who have been affiliated with Indiana University Radiology. My hope is that this detailed review of our history will help to bring us all closer together in body and spirit, and to make us all proud of the time that we spent in association with the Indiana University Radiology Department.

Mervyn D. Cohen, M.B.,Ch.B., M.D.
Eugene C. Klatte Professor of Radiology
Chairman, September 1996 – December 2002



*“We laugh, we cry, we live, we die;
We dance, we sing our song;
We need to feel there’s something here
To which we can belong.
But most of all we need close friends
We can call our very own.”*

—Shelly Jackson-Denham

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The Beginning of
a
Department of Radiology

1906-1946



In 1895, a German physicist working in his laboratory at the University of Wurzburg made a remarkable discovery. For months he had been conducting a series of experiments using cathode ray tubes. Then one day in the darkened room he was startled to see a greenish glow on a fluorescent screen several feet away. He realized that he was not dealing with cathode rays but with a new kind of light rays which could travel straight lines and pass through different materials. First he tested the rays with a sheet of paper, then with a playing card, then with a book. Metal, he found, blocked the ray. When he positioned a small lead disk between the tube and the screen, he saw only the outline of the disk. But, to his great surprise, he also saw the bones in his forefinger and thumb. Over and over, he made his tests, and the same results occurred.

After dinner on the 22nd of December, he asked his wife to join him downstairs in his laboratory. There he told her to place one of her hands on a cassette containing a photographic plate, and for a period of 15 minutes he directed rays from the tube on her hand. When this plate was developed, they saw the amazing results, the outline of the bones of her hand, which appeared to be light in contrast with the darker shadows of the hand's flesh. Clearly visible were the two rings she wore on one finger. The scientist called these new rays X-rays.



Dr. Frank E. Widemann of Terre Haute demonstrates the first X-ray machine made in Indiana, 1896. Photo from the Indiana State Medical Association's 150th Anniversary Newsletter, 2000.

Wilhelm Conrad Roentgen led the way to a new specialization in medicine with his discovery of the X-ray in 1895. But this did not happen right away. The highly-touted X-ray at first delighted a general public which was both fascinated and amused by the possibilities of pictures revealing what lay beneath the surface. The first X-ray operators were often photographers or, sometimes, physicians for whom photography was a hobby. Yet there were other physicians who saw right away the medical implications in Roentgen's discovery. Some consulted physicists about the possibilities. Others approached photographers or electrotherapists to gain technical assistance. Doctors in other areas of medicine sometimes belittled the X-ray operator, seeing him as a person of lower rank than other doctors. This perception stemmed in part from the reluctance of these early radiologists to let others operate their X-ray machines.

While many of the first X-ray applications called for little or no medical knowledge, later equipment revealed more detailed anatomy and subtle pathology changes. It was a revolutionary step in the practice of medicine. With the X-ray, it was possible for physicians to see inside the human body.

The Beginning of a Department of Radiology

Today, more than a century later, the X-ray, much improved over the years, is still widely used. However, in more recent years, amazing new imaging modalities have been developed which go far beyond the basic X-ray image produced on film. The most recently acquired imaging machine at the Indiana University Medical Center is a brain scanner, a 3.0 Tesla MRI, one of a small number in the world and twice as powerful as any other in the state. Radiology as a specialty has grown as the university's medical school has grown.

The Department of Radiology was officially established at the Indiana University Medical Center in Indianapolis in 1947 with Dr. Raymond Cole Beeler as its first chairman. Prior to that time, radiology had been a division of the Department of Medicine although even in the 1930s and early 1940s it was sometimes referred to as a department.

The history of the Medical Center's radiology department begins, however, not in 1947 but some 40 years earlier. By that time, two proprietary medical colleges in Indianapolis, along with a Fort Wayne school, had consolidated into Purdue University as the Indiana Medical College. IU in 1907 established its own medical school, the State College of Physicians and Surgeons. That year the state legislature determined that medical education in the state should not be divided, but centered at one university.

In 1906, a number of Bloomington citizens, friends of the university, raised funds to purchase the Central College of Physicians and Surgeons building at 102 North Senate Avenue, and Indiana University then established an affiliate school in Indianapolis for the last two years of the university's medical course. The affiliation with this new school, the State College of Physicians and Surgeons, was academic only. I.U. had no financial responsibility for the Indianapolis school.

Then, in August 1907, a recommendation was made to the Board of Trustees of I.U. that the Indianapolis school be united with the Bloomington school under the name of the Indiana University School of Medicine. The following spring the resolution for consolidation stipulated the maintenance of a complete medical school in Indianapolis as well as the two-year program in Bloomington.

Among the early medical school faculty was Dr. E. Oscar Lindenmuth, who had come to Indianapolis in 1906 after earning his M.D. degree from the Philadelphia Medico-Chiurgical College. His name appeared in the *Indiana University School of Medicine Register* for 1906-7. Under "Announcements of the Affiliated State College of Physicians and Surgeons at Indianapolis," Dr. Lindenmuth was listed as professor of dermatology and electrotherapeutics. His electrotherapeutics course, as the *Register*

described it, comprised elements of electricity, X-ray apparatus, X-ray diagnosis, the therapeutic application of X-ray treatment with high frequency currents, and diseases amenable to electrotherapy. This course, held for an hour on Monday afternoons, was designated for senior year students. A related clinical course was offered in the senior year to half the class each semester.

It was with Dr. Lindenmuth's appointment to the faculty that the teaching of radiology was established at the Indiana University School of Medicine at Indianapolis. Local historian Jacob Dunn in his book, *Greater Indianapolis* (1910), writes about Dr. Lindenmuth, saying that "in areas covered by his professorship at the medical school, [he was] a recognized authority and a valued and popular member of the faculty." In addition to the special courses in X-ray and electrotherapeutics he had taken as part of his medical training, Dr. Lindenmuth had been an assistant radiographer at the Medico-Chiurgical Hospital in Philadelphia while he was in medical school and later was a radiographer at the Howard Hospital there. At I.U.'s affiliate school in Indianapolis, he held the chair of dermatology, electrotherapeutics, and X-ray. He was elected to the same chair when the school became part of the I.U. medical school, and he was also named superintendent of the hospital maintained by the school.



Indiana Medical College, later known as the Medical College of Indiana, 1878 - 1905. (Department of Medicine of the University of Indianapolis) Photograph #C2.51.3-001, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

The university's medical school in Indianapolis was housed in the old Medical College of Indiana building located at Senate Avenue and Market Street. The clinical facility, the medical school's hospital, was in the building which had housed the affiliate school, the State College of Physicians and Surgeons, only a short distance north on Senate Avenue. The X-ray and electrotherapy laboratory was located on the second floor of that building. This is where Dr. Lindenmuth worked.

A 1907 university pamphlet on its equipment and facilities describes in detail this first X-ray and electrotherapy laboratory:

[It is] equipped with the very best apparatus that can be obtained, consisting of an induction coil, Roentgen radiographic table,

The Beginning of a Department of Radiology

international high frequency resonator, wall cabinet, Victor giant magnet on crane for extracting steel, etc., X-Ray tubes (treatment, radiographic cavity and ventril), tube rack, tube stand with accessories, 8 x 10 fluoroscope, a large view box, electrodes, etc., and a thoroughly equipped dark or developing room.

The 20-inch X-Ray coil is mounted on a mahogany-finished table with mercury turbine interrupter, controlling rheostat, and necessary switches. In addition there has been added to the coil a volt meter, ammeter, a milliamperere meter for the X-Ray tube, and a large electrolytic interrupter which has a capacity for running any length of time and producing an ideal current for obtaining the very best radiographic and diagnostic results.

The Roentgen radiographic table is the best that has been produced, and is adapted to all kinds of service. The carriage which supports the compression rings, lead glass shield, etc., runs on a steel track beneath the table. This allows the tube to be adjusted to cover any spot on the table top, and by tilting the tube carrier sufficiently, practically every adjustment can be obtained that an X-Ray operator could ever desire.

At this laboratory, during the school year, the medical students were instructed in X-ray physics, electrical apparatus, X-ray apparatus, radiographic techniques, therapeutic application of X-rays, and general electrotherapy.

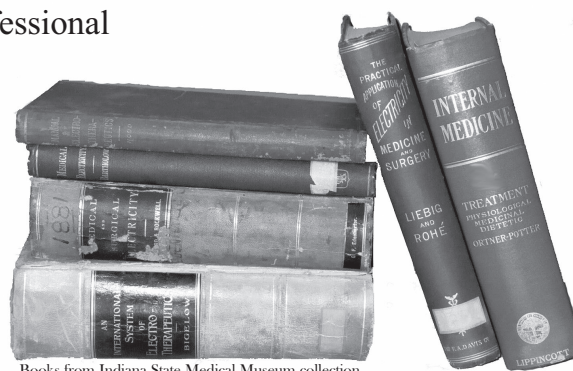
A colleague of Dr. Lindenmuth at the medical school was Dr. Albert M. Cole. A native Hoosier, Dr. Cole was a graduate of the Medical College of Indiana and had begun teaching there in 1898. He had studied, too, at the School of Medicine of Purdue University and the University of Pennsylvania's School of

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The first professional announcement of x-ray service in Indiana is found on page 195 of the Indiana Medical Journal (1897), which informs physicians of the Indiana Cathescope Company, located in the Lombard Building at 24 1/2 East Washington Street, Indianapolis. The announcement was not presented as an ad, but as a general piece of information indicating that the company is soliciting patient referrals. The article also mentions that the instruments used included Hammerschlag's cathescope and Edison's fluoroscope. There is no physician's or other personal name associated with the announcement.

The first professional ad for x-ray service can be found in the JISMA vol. 11, 1909 Advertisements Page xv. The ad announced Dr. Albert M. Cole's skin disease, electro-therapeutics and X-ray practice. His obituary (JISMA vol. 21, page 308, 1928) indicates that he was a 1894 graduate of the Medical College of Indiana, and a pioneer in the development of roentgenology in Indiana.

Medicine at Philadelphia before establishing a private practice in the Newton Claypool Building on Pennsylvania Street in Indianapolis. He is credited with being the city's first physician with a practice limited to radiology. He was the first, too, to place a notice in a professional publication, the *Journal of the Indiana Medical Association*. Dr. Cole's practice, according to this 1909 notice, was limited to "skin diseases, electro-therapeutics and the X-Ray." His X-ray laboratory was equipped "for all skiagraphic work." When the Indiana University medical school was established in Indianapolis, Dr. Cole joined the faculty. A highly-esteemed physician, he was recognized as an early developer in Indianapolis of roentgenology.



Books from Indiana State Medical Museum collection.

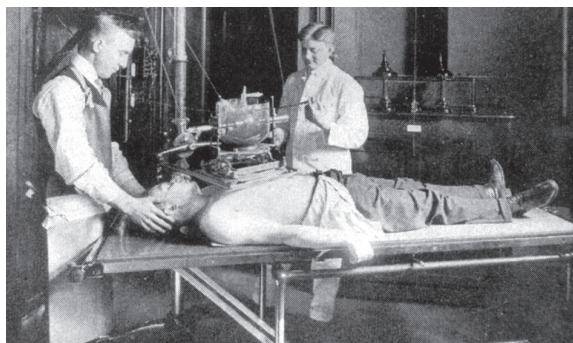
For a decade, these two physicians were the only faculty members teaching X-ray courses to Indiana University medical students in Indianapolis. By 1917, Dr. Lindenmuth, listed in the university's *Bulletin* as faculty in the Department of Medicine, had charge of "a very complete Roentgenological department." By that time, the university's medical school at Indianapolis had gone through great changes



Dr. E.O. Lindenmuth, former member of the faculty of the Indiana University School of Medicine and long one of the leading figures in the medical profession in Indianapolis . . . attended the Bloomsburg Literary Institute at Bloomsburg, Pennsylvania, and the Medico-Chirurgical College, now the post-graduate school of the University of Pennsylvania, at Philadelphia, where he was graduated with high honors and M.D. degree in 1906. His locating in Indianapolis and entrance into practice in the city came in 1907, and along with general practice, now principally devoted to diagnostic work, he served as member of the Indiana University School of Medicine from 1907 to 1925, holding chairs in dermatology, X-ray and electro-therapeutics from 1907-1919, and that of physical therapy from 1919 to 1925, when he resigned to give himself more fully to the demands of his immediate practice. He also served as superintendent of hospital maintained in connection with the medical school in 1908, and was formerly, for several years on the staffs of the Indianapolis City Hospital and the Robert W. Long Hospital, Indianapolis. With the latter he also held the post of Roentgenologist for several years. On locating in Indianapolis his connection with the medical school was with the College of Physicians and Surgeons. . .

He entered the Medico-Chirurgical College in 1902 and in addition to regular courses pursued numerous special studies in electro-therapeutics, ophthalmology, clinical diagnosis, and internal medicine. He also made special study of the X-ray and in addition to college work held the position of Roentgenologist at the Howard Hospital, Philadelphia, during the year 1905. During the years 1904, 1905 and 1906 he was assistant Roentgenologist at the Medico-Chirurgical Hospital, Philadelphia. He also spent a portion of 1906 in post-graduate study. . .

The Beginning of a Department of Radiology



X-rays became an accepted part of medical practice by 1917, as shown here at Long Hospital in Indianapolis. Photo from the Indiana State Medical Association's

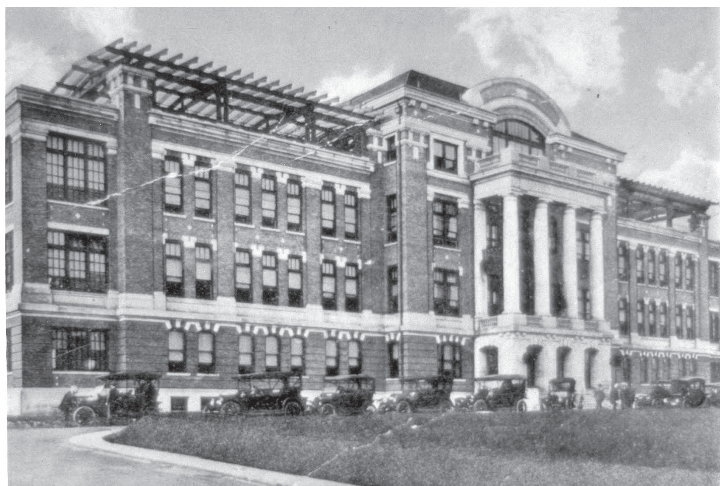
with the completion of the Robert W. Long Hospital in 1914 and the Medical Education Building in 1917. These were the first buildings on the Indiana University School of Medicine campus in Indianapolis.

Two important factors had contributed to this growth. The financial gift of Dr. and Mrs. Robert W. Long had made possible the opportunity to build a state hospital in Indianapolis. The

decision to purchase land on Michigan Street west of downtown led, in time, to a medical school campus, gaining more importance for Indiana University's School of Medicine. Secondly, there was a need for a new medical school building after fire destroyed much of the fourth floor of the university's medical school building downtown at Market and Senate. With the new buildings in the new location and the accessibility to hospitals and to a part-time faculty of practicing physicians, the medical school property was greatly enhanced.

When Long Hospital was constructed and ready for occupancy, the X-ray section was assigned space opposite the boiler room in the hospital's basement. A closet nearby became the darkroom, and films were stored in an area beneath the hospital's porch. Special equipment installed there consisted of a gas type X-ray tube suspended on a wooden arm which could be moved into vertical or horizontal positions. Exposed wires

connected this tube to a mercury interrupter supplied with current from a static reformer. The X-ray images were recorded on glass plates 14 by 17 inches or 11 by 14 inches in size and about an eighth of an inch thick. The

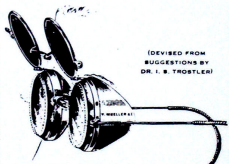


Long Hospital, ca. 1920. Photograph #C2.67.3-004, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

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Raymond C. Beeler, M.D., Professor of Radiology and chairman of the Department of Radiology 1947-1954, IU School of Medicine. Photo taken November 1, 1947. Photograph #P Beeler, Raymond C. 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

plate's photographic emulsion was processed in open trays and the images viewed on incandescent lamps. These plates in storage under the porch became the first film file.

It was in this X-ray area that Dr. Raymond Cole Beeler was based when he joined the staff in 1919 as director of X-ray services at Long Hospital. A 1912 graduate of the Indiana University School of Medicine, Dr. Beeler took an apprentice training in radiology with his uncle, Dr. Albert M. Cole, and then joined him in private practice.

During World War I, Dr. Beeler was sent to France with I.U.'s Base Hospital 32, taking charge of a casualty unit conducting fluoroscopic examinations of soldiers with gunshot wounds. On his return from the war, he took additional training with other pioneer roentgenologists and then resumed his private practice with Dr. Cole. In addition to his work at Long Hospital, he was also appointed part-time director of X-ray at Methodist Hospital. At Long, Dr. Beeler added the first fluoroscopy unit. Beneath a wooden table was a gas X-ray tube, encased in a wooden box which rolled up and down under the table on coasters. The fluoroscopy image was observed through a hand screen which the examiner held over the patient. These devices were made of wood in order to reduce the chance of fatal electrical shocks from the poorly insulated high voltage tubes and lead-in wires. Some years later, a transformer system was installed with a mechanical rectifier. An additional X-ray tube immersed in an oil-filled tank was hung beneath the table to permit fluoroscopy on a hand-held fluorescent screen.

Like Dr. Cole and Dr. Lindenmuth, Dr. Raymond Beeler brought strength to the university's medical education program. He was, from the start, actively involved in medical organizations. Participating in the December 1919 program of the Indianapolis Medical Association, he spoke on "The Value of the Roentgen Ray in Diagnosis." As an associate professor, Dr. Beeler in 1920 was

"... the laboratory of Dr. Raymond Beeler and ... his collection of X-ray plates and films revealing the wounds of American soldiers. The doctors are still "carrying on" in the work of reconstructing Yanks who have fallen in battle overseas. In Dr. Beeler's collection was one interesting plate that showed a machine gun bullet lodged deeply in the thigh bone of a soldier. The doctors could not have discovered the bullet by any other process than the X-ray."

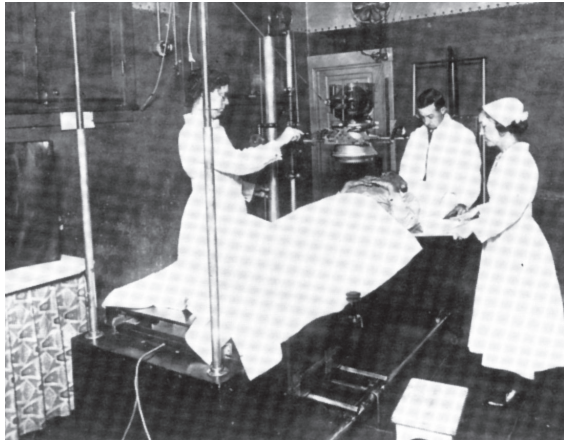
From The Indianapolis News, February 17, 1929, article, "Mrs. Louisa Roentgen Grauel, of Indianapolis, Last of the Roentgens, was Cousin, Playmate and Bridesmaid of the Discoverer of X-rays," by William Herschell.

The Beginning of a Department of Radiology

teaching Roentgenology I, but the curriculum for radiology was not yet a fixed matter. The School of Medicine's *Bulletin* for the next two years indicated no Roentgenology courses being taught although medical students on three afternoons a week would be attending various class exercises which included lectures on electrotherapeutics. Until the 1928-1929 academic year, Roentgenology I was not again a course offering. Then Dr. Beeler and Dr. Lester Alvin Smith were teaching this course to fourth-year students.

Dr. Smith in 1921 was named the first radiotherapist on the medical school faculty. In addition to his private practice specialization in radiotherapy, he consulted at Long Hospital and administered X-ray and radium treatments to patients there. Other radiologists came on staff in the 1920s. In 1926, Dr. James Collins, a partner of Dr. Beeler, joined the radiology faculty and assisted Dr. Smith in radiotherapy. Dr. Cecil S. Wright came on in 1928. Dr. Wright was the first full-time radiologist. In his history of Indiana University, Dr. Burton Myers notes that in 1926 only four persons were employed full-time for instructional purposes at the Indianapolis campus of the School of Medicine. The rest of the medical school staff were volunteers or physicians hired part time at a low compensation.

With its additional faculty, the radiology section began to grow. Its capabilities began to expand as it acquired new equipment. With funding provided by the Eli Lilly Company, a Keleket X-ray machine was installed. This machine, manufactured by the Kelley-Koett Manufacturing Company of Covington, Kentucky, was considered a revolutionary



Dr. Raymond Beeler, the school's first roentgenologist, uses the first X-ray unit in Long Hospital in 1922. Parts of the machine were made from wood to prevent electric shock. University Library Special Collections and Archives, IUPUI (UA24-002611)



Equipment from the Indiana State Medical History Museum.



Equipment from the Indiana State Medical History Museum.

improvement in X-ray equipment. An X-ray table made of a metal frame and plywood top enabled the patient to be tilted manually into vertical and horizontal positions. A metal-rail mounted tube stand allowed for greater flexibility and range of motion. The X-ray tube and exposed high voltage cables were still not shockproof. But the retractable spools attached to the cables kept them taut and less likely to come in contact with the patient or the operator of the machine. Despite these precautions, both physicians and patients occasionally received serious electrical shocks in using this equipment.

Because of the low radiation output of gas X-ray tubes, X-ray exposures were necessarily long and difficult. Shorter exposure times and a much more powerful source of X-rays came with the General Electric Company's new Coolidge (photo right) vacuum tubes. Celluloid film replaced the old glass plates. In only a few more years, new shockproof X-ray equipment was installed, and the noisy mechanical rectifiers were replaced with vacuum tube circuitry, making procedures safer both to patients and to personnel operating the equipment. With the addition of the moving Potter-Becker diaphragm and intensifying screens, diagnostic examinations became more useful.

Indianapolis City Hospital, later known as Wishard Memorial Hospital, installed its first X-ray unit in 1925. That year Dr. Ralph Lochry became City Hospital's first radiologist, working there on a part-time schedule. He had worked with Dr. Beeler in France, assisting him in taking X-rays at Base Hospital 32. Like Dr. Cole and Dr. Beeler, Dr. Lochry would go over to Long Hospital to carry out any X-ray procedures, chiefly for orthopedic doctors treating injuries. In 1934, City Hospital's radiology department for diagnosis and therapy was established, and the following year, Dr.



A General Electric Coolidge tube stands about two feet tall. In 1913 William Coolidge, a General Electric scientist, developed an X-ray tube that differed from previous cold-cathode gas filled tubes. His tube was the first to use a tungsten filament resulting in the first thermionic emission x-ray tube which is the basis for all modern X-ray tubes. Close-ups of the filament area and the GE Coolidge etch are shown above. Photo used with permission from Tom Tromp, Kilokat's Antique Light Bulb & Vacuum Tube Site (bulbcollector.com).

The Beginning of a Department of Radiology

Helen Crawford became that hospital's first full-time radiologist. Since City Hospital at that time lacked full accreditation in residency training, Dr. Crawford was assisted by residents holding one-year appointments. The Cold Springs Road Veterans Administration Hospital, which opened in 1928, acquired its first X-ray equipment at that time.

Also significant in 1928 was the founding of the Indiana Roentgen Ray Society and the part Indiana University medical school radiologists were to play in it. On January 20, notices were sent out by Dr. Beeler, Dr. Lochry, and Dr. Smith to organize a society of roentgenologists in the state. At the meeting which was held on January 28 at the Indianapolis Athletic Club, Dr. Raymond Beeler, a charter member, was elected the society's first president. Dr. Lindenmuth, Dr. Collins, Dr. Lochry, Dr. Smith, and Dr. C. S. Stayton, all with connections to the university's radiology program, were also charter members. Dr. Albert Cole was given an honorary membership. Another connection between the medical school and the society would come about years later when a gavel was given to the society by a friend of Dr. William Loehr, with whom he had served in World War I in France. The wood for the gavel came from the desk of Dr. Roentgen.

Dr. Beeler would take an active part in radiology organizations on a national level as well as on a state level. In 1946 he would become president of the American Roentgen Ray Society. Later, his son, Dr. John W. Beeler, would also gain recognition nationally, serving in 1975 as president of the Radiological Society of North America.

An important innovation that came about in the late 1920s was the medical center concept, combining the medical school, its faculty, and the hospital services under one administration. This was in line with the practice being established across the country following the much-heralded Flexner report on medical education. Historically, medical schools had been completely separate administratively from hospitals. The faculty of medical schools holding professorial appointments taught the students at the schools and used the hospitals or nursing services for the care of patients referred to them. But with technological advances in surgery, laboratory science, and radiology, a demand was created for these services in hospitals, and equipment for such services was provided. Hospitals needed full-time radiologists as well as anesthesiologists and pathologists to supply these services.

The term "medical center" came into use with the opening of the Columbia-Presbyterian Medical Center in 1928 and the New York Hospital-Cornell Medical Center in 1932. Johns Hopkins University also had, to a large extent, led the way for this development. The key principle of a medical center was that the medical schools and hospitals would not only operate in close proximity but would collaborate in

teaching, research, and patient care. Indiana University, with its developing campus and accessible hospitals, was ideally suited to practicing this new medical center concept.



Building Riley Hospital about 1924. There is a cornfield in the foreground that was located in the west end of the early Indiana University campus. Photograph #C2.95.1-002, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



Riley Hospital construction, April 24, 1923. Photograph #C2.95.1-006, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



Riley Hospital flag raising, December 6, 1925. Photograph #121-00003-1, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

The I.U. Medical Center needed to expand, but the funds were lacking. Many members of the medical school's faculty were at the university only part time. In the mid-1930s, in an American Medical Association survey of the country's 77



Riley Hospital, ca. 1925. Photograph #C2.95.3-006, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



Riley Hospital interior, 1925. Photograph Bass, #91130-7 from the Indiana Historical Society Archives.



Riley Hospital, 1920s. Photograph #C2.95.3-003, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

The Beginning of a Department of Radiology



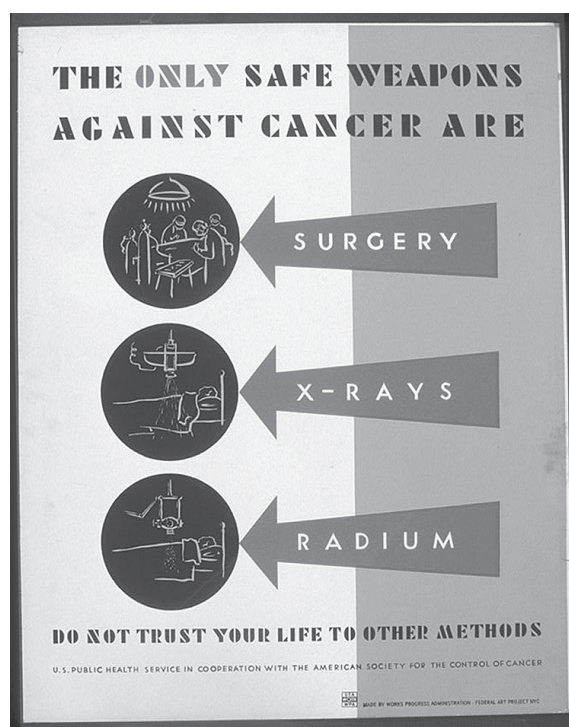
Long Hospital visible in the left background. Photograph #C2.95.1-004, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



Work on foundation for Long Hospital. Emerson Hall is shown. Photograph #C2.18.1-002, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

acceptable medical schools, Indiana University ranked very low. A special committee named by the Indiana State Medical Association recommended that the first two years of the medical school be moved to Indianapolis and that the legislature allocate more money for the School of Medicine. Although the Indiana legislature in the postwar years did provide additional funds for the school, the first year of medical school education in Indianapolis would not come until 1958.

The growth of the Medical Center called for additional building space. Riley Hospital for Children had opened in October, 1924. Three years later, the Coleman Hospital for Women had been added. A highpoint of the 1930s was the construction in 1937 of the Clinical Building, a brick and stone extension at the north end of Long Hospital. Its cost of \$600,000 was financed through the federal Public Works Administration, supplemented by state funds for the university. Newspaper accounts referred to the new building as a “nerve center” because of its location convenient to Long, Coleman, and Riley Hospitals. This six-story addition to Long provided a much needed expansion of the school’s facilities and, in turn, freed usable space in other university buildings. With the many medical school departments relocating there, patients could be cared for much more efficiently. In the planning of the new building, consideration was given to the serious need for an enlarged, better-equipped X-ray area.



Web photo: A 1938 poster identifying cancer treatments created through the Works Progress Administration Federal Art Project, New York. From the Library of Congress Prints and Photographs Division, Washington, DC. Digital ID: cph 3f05515.

All radiology procedures from Coleman, Long, and Riley Hospitals were carried out in the Clinical Building department. Routinely, patients from these hospitals were taken there when X-rays were needed. Some years later, rather than move rather critically sick children from Riley, a portable X-ray unit was set up in Riley so that procedures such as bronchoscopy could be carried out under anesthesia without moving the patient across campus. Until then, all imaging was done in the Clinical Building.

An article in the April 1938 issue of the *Journal of the Indiana State Medical Association* spoke glowingly of the radiology section of the building: “One of the most important of the departments to be located in the new building is an enlarged cancer, radium, and X-ray clinic, with all the latest highly technical devices designed to arrest or treat the disease. A large part of one floor will house this equipment, and the new clinic will give to the school and to the patients of the hospitals much greater facilities than have been previously available.” This article also quotes Dr. Willis D. Gatch, at that time dean of the School of Medicine, who spoke favorably of radiology’s place in the new facility: “This department alone,” he said, “is worth to the people far more than the dollar and cents cost of the building.” Today the I.U. Department of Radiology uses this space for research and for the radiology technologist training school.



Coleman Hospital for Women 1939. Photograph Bass, #243576 from the Indiana Historical Society Archives.

The X-ray facilities in the north wing of the first floor were a sharp contrast to the X-ray area in the basement of Long Hospital. In those drab, cramped quarters, limited space and the arrangement of the equipment had frequently caused problems for the staff working there. They did their best with what they had. There had been two radiographic rooms and one room for X-ray therapy. Only certain therapy cases could be treated in the therapy room; others were treated in one of the radiographic rooms. This left only one room available for the many routine radiographic cases to be seen.



A technologist pushes an old portable X-ray unit. Photograph #UA24-000730 N, UA 24, IUPUI University Library Special Collections and Archives.

Outpatient clinics, emergency rooms, radiology, and clinical laboratory services were housed in the new Clinical Building.



Willis D. Gatch, Dean of the School of Medicine, lays the cornerstone of the Clinical Building in 1936. Photograph #P Gatch, Willis D. 005, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

In contrast, the radiology division in the new building provided three diagnostic rooms, and two of these could be used for fluoroscopic examinations.

In the new quarters, the therapy section was enlarged to handle the steadily increasing number of cases being treated. A suite of three rooms provided space for carrying out high-voltage radiation treatments. Two new Westinghouse machines, generating 200 kv X-ray, were installed for external radiation therapy, and a Thermax water-cooled unit also provided for superficial therapy. This was a great step forward. Previously, all X-ray treatments had been given on a lower voltage X-ray tube utilizing the same equipment used in diagnostic radiology. Application of the

modern deep-therapy treatment of cancer was made easier by new machines installed in booths lined with barium plaster, which prevented the secondary rays from penetrating the walls. Operators were protected by heavy lead screens. All radiation therapy was centralized, with the radiology section now in charge of the 170 milligrams of radium element belonging to the university.

Later, in 1944, other Westinghouse equipment would be installed in the department. This was Dr. Beeler's gift to the radiology division of a Polaroid stereoscope, designed and constructed by the Research Engineering Department of the Westinghouse X-Ray Company. Before the installation of this stereoscope, a system of prisms or mirrors was required for viewing stereoscopic X-ray films. Only one or two persons could study the films at the same time. But the Polaroid stereoscope offered more. Essentially, it employed polarizing screens and a semi-transparent mirror for superimposing two stereoscopic roentgenograms. The operation of this stereoscope was based on the property of certain materials to polarize light and, by the use of these materials, it was possible to gain multiple viewing of stereoscopic X-ray films, something the lens and prism or mirror system could not do.

With the expansion in facilities and equipment came an increase in work volume and an increase in the number of persons brought on staff. The number of patients seen in X-ray was accelerating. During the 1930s the volume of work increased from several hundred examinations to several thousand each year. The increased requests

A radiographic Technique chart from 1938. This chart accompanied Keleket Shock-Proof X-ray equipment. Photographed at the Indiana Medical History Museum.

for examinations led to the apprenticeship training of X-ray technicians in the 1920-1930 period. Dr. Lindenmuth earlier had trained medical students and orderlies as apprentices.

The Indianapolis *Star* reported that the X-ray department in 1930 had 4,419 patients, an increase of 732 over the previous year. These numbers grew rapidly. During 1938, according to the Medical Center's *Quarterly Bulletin*, 13,277 visits were made to the X-ray department by patients from different sections of the Medical Center. In these visits 10,006 examinations were made and 5,328 treatments given. By 1942, patient visits to radiology would increase to 15,000.

Medical education in radiological studies was developing, too, in the 1930s. The 1931-32 medical school *Bulletin* for the first time listed a Division of Radiology as a part of the school's Department of Medicine. The courses of study offered in 1931-32 were more extensive than in the previous year. For first-year students there was a Study of Radiographs of Normal Anatomical Structures. Medicine 23 was now offered as Roentgen Diagnosis. This was a senior year course.

Radiotherapy was given as part of the general course in Therapeutics in conjunction with the Department of Medicine. A fourth course, Roentgenology, was offered to second, third, and fourth year students.

Riley Hospital in 1935. The photograph was probably taken from the roof of Emerson Hall. Photograph #C2.95.3-012, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

RADIOGRAPHIC TECHNIQUE
KELEKET K-90 SHOCK-PROOF APPARATUS
KELEKET EQUI-CONTACT, BAKELITE FRONT CASSETTE WITH PATTERSON HI-SPEED SCREENS
CHART No. 103
20 AND 30 MILLIAMPERES

WHERE AND HOW TO MEASURE PLANE A—B

MASTOID DOUBLE ANGLE

SINUS

ATLANTIC SINUS

JAW

GI PRONE

GI UPRIGHT

TIME-TEMPERATURE DEVELOPMENT CHART

THE KELLEY-KOETT MFG. CO., INC.
CREATORS, DESIGNERS AND MANUFACTURERS OF
HIGH-GRADE X-RAY EQUIPMENT SINCE 1900
COVINGTON, KY., U. S. A.

WHERE AND HOW TO MEASURE PLANE A—B

CHEST PA

CHEST LATERAL

CERVICAL LAT

CERVICAL AP

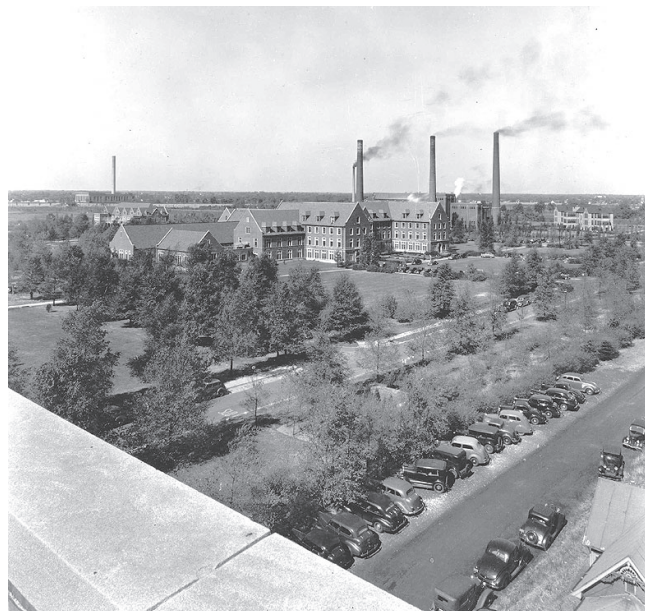
LUMBAR LAT

LUMBAR AP

DORSAL LAT

DORSAL AP

FOR SERVICE
1150 Home Mansar Bldg.
Indianapolis, Ind.
Telephone Lincoln 2220



The Beginning of a Department of Radiology

The *Bulletin* also noted that new apparatus had recently been purchased for the laboratory in Long Hospital and that a full-time radiologist had been hired. This would have been Dr. Cecil S. Wright, who had come in 1928. The radiology faculty at that time consisted of Dr. Beeler, listed as associate professor and division chairman, and six other physicians who were assistant professors: Dr. William Harrison Kennedy, Dr. Lester A. Smith, Dr. Ralph L. Lochry, Dr. Harold C. Ochsner, and Dr. Chester A. Stayton, and Dr. Wright. This group was increased in 1936 with the addition of Dr. Clifford Taylor.

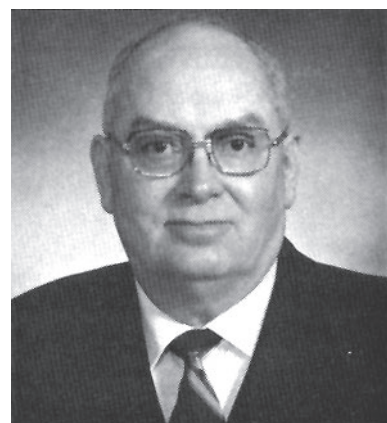
In 1938, in addition to the full-time radiologist, the staff included four technicians trained in radiographic and therapy techniques and two medical students trained to cover all emergency night work and some clinical work as well. There were also a darkroom technician, a secretary, a file clerk, and an orderly. When Dr. Wright left in 1939 to enter private practice, Dr. Arthur Echternacht was appointed full-time director roentgenologist. Dr. Beeler was clinical professor of Roentgenology.

The number of full-time faculty at the Medical Center in the late '30s and early '40s was still small. Department heads and most of the teaching faculty were doctors in private practice, volunteering their services to the university or coming on a part-time schedule. About six or eight radiologists from surrounding hospitals and offices held academic appointments. Dr. Beeler as clinical professor of radiology assigned other private practitioners to teach small groups of senior students in diagnostic radiology once weekly for about four months out of the year. Dr. Lester Smith was available on a weekly basis for consultation on radiotherapy patients, and he also attended the tumor clinic which was held monthly.

All fluoroscopy, film interpretation, and radiation therapy procedures were carried out by the full-time staff, which consisted of Dr. John A. Campbell and Dr. Echternacht. Although the medical school was operating on a very low budget, some full-time clinical faculty were being added. Dr. Campbell was one of these. In 1941 and 1942, the radiology division also received some part-time assistance from a young physician working in Dr. Beeler's office in the Hume-Mansur Building downtown. Dr. Marvin Hall came for a hour or two each day to help.

Dr. Campbell came in 1941, appointed to the faculty as a full-time assistant radiologist and instructor in Roentgenology. He would continue in the radiology department until 1971, serving the last 15 years as its chairman. A graduate of the College of Medicine at the University of Cincinnati, he had interned at Detroit Receiving Hospital, the teaching unit of Wayne State Medical College. He then completed a three-year residency in general radiology at Henry Ford Hospital and later did a six-month fellowship in neuroradiology in the University of Michigan's

radiology department. Advised that Indiana University Medical Center was seeking a full-time, board-certified radiologist, he applied to I. U., thinking that, with his 1A draft status, if he enlisted from an academic institution he might have a better chance for an assignment in radiology in the military.



John Robb, M.D.

He assumed supervision of the pediatric radiology cases from Riley Hospital in addition to his work in radiation therapy. In 1943, he was made chief of radiology at Indianapolis General Hospital, as the old City Hospital was then known, when Dr. Helen Crawford left. During the war years, Dr. Campbell was at General where he was supported by Dr. Lester Smith and Dr. John Robb. Dr. Robb had finished his radiology training in St. Louis, become board certified, and joined Dr. Smith in his downtown practice about 1943. He came out to General Hospital voluntarily several times a week to help staff cases. Dr. Campbell relied on Dr. Smith for consultation on cases and for his work in the tumor clinic. A group of private radiologists which included Dr. Lochry, Dr. Ochsner, and Dr. Stayton gave weekly film presentations to the medical students. Dr. Clifford Taylor, who succeeded Dr. Lochry at St. Vincent Hospital, also participated in this teaching.

At the time of Dr. Campbell's appointment in 1941, three of the four X-ray machines were still not shockproof and were hazardous to patients because of the exposed high-voltage wiring. The X-ray films being used were also inflammable, and patients' film records continued to be stored outside the hospital in a space beneath the front porch of Long Hospital. One reason for this precaution was the disastrous fire at Cleveland Clinic Hospital where deadly nitric oxide fumes had caused the death of almost 300 patients. The file room at Long was so cold in the winter time that the office personnel would put on overcoats and gloves whenever they went to file or to remove films from the files.



X-ray machine and patient. Photograph #UA24-000743, UA 24, IUPUI University Library Special Collections and Archives.

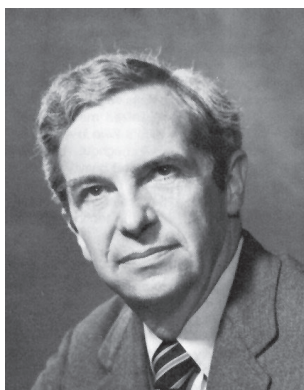
The Beginning of a Department of Radiology

Changes were being made in how medical students were taught. Dean Gatch was quoted in the university's *Quarterly Bulletin* and also in the Indianapolis *Star* about the progress being made in teaching techniques at the Medical Center in 1939. "The student body represents the very pick, mentally and physically, of the youth of the state," said Dean Gatch. "It is being trained to perform one of the most important of all services to society. It consists of men who have already spent four years in college. They demand special methods of instruction. It is the opinion of all medical educators that medical students today cannot successfully be taught by the traditional methods of instruction. They are men of mature judgment who are capable of self-direction. They teach one another. The seminar method of instruction is best suited to their needs. This involves reports by students on assigned topics and free, informal discussion."

Much more drastic changes occurred in the teaching program, however, when the United States entered the war in January 1942, and the I.U. School of Medicine was declared a military medical school. At that time, six full-time faculty members were instructing students in obstetrics, medicine, surgery, pediatrics, psychiatry, radiology, and pathology. Faculty members who were draft eligible were commissioned in the U. S. Public Health Service under a congressional army act called Procurement and Assignment. They were assigned to the I. U. military medical school as faculty for the duration of the war. As there was no I.U. radiology department at that time, Dr. John Campbell was appointed a full-time instructor in the Department of Internal Medicine, Division of Roentgenology, at a salary of \$2400 a year.

Only draft-eligible students were accepted in the school. As medical students, they were commissioned and put into army uniforms. They were given \$50 per month and \$2.75 per day for expenses. Tuition and other educational costs were paid by the army. In 1943 a new class was chosen in February rather than May, and new students began their medical classes in May. Accelerated classes were conducted year round in order to graduate students in a shorter time. Without summer and semester breaks and by working long hours six days a week, these students were able to complete the four-year curriculum in fewer than three years and could immediately enter military service. A new class was begun every eight months. Radiology instruction, according to a medical student of that era, consisted only of an occasional lecture by Dr. Beeler.

In 1943, the medical school curriculum underwent a significant change. No longer were the first two years primarily lectures and laboratory sessions in basic medical sciences nor were the third and fourth year students spending mornings in outpatient clinics and afternoons in lectures. Although some clinics and lectures were required, after 1943 fourth-year students were given full-time assignments to clinical services in the hospitals for a given number of weeks.



John Beeler, M.D., 1975



Willard Smullen, M.D.

In his history of Indiana University, Thomas D. Clark notes that the wartime medical faculty was made up largely of private physicians past the age of military service. The shortage of staff, of course, called for more work for the faculty, whose hours at the university were limited. "Rather drastic steps were taken to revise the teaching program which required a much higher rate of student attendance at all exercises [and] a more tightly coordinated curriculum. . . . Future exams were to be searching, and students were informed that they would have to be largely self-directed, and would get a good part of their medical education from attentive reading."

The accelerated medical school program from early 1942 to 1945

turned out a significant number of doctors who decided to become radiologists. Dr. John Beeler, the son of Dr. Raymond Beeler, and Dr. Richard Silver had an office in downtown Indianapolis. Dr. Richard Datzman, Dr. James Lorman, and Dr. Lloyd Bridges later practiced together in Ft. Wayne, Indiana. Drs. Warren E. Fischer, John Wilson, and Maurice Manalan were also in this program. Dr. John Scott and Dr. Francis Land from the December 1944 medical school class also went into radiology.



Richard Silver, M.D.



Warren Fischer, M.D.



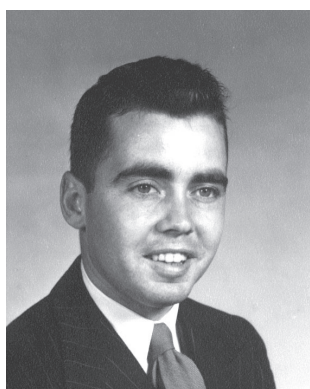
John Little, M.D.

World War II ended in Europe on May 7 and in Japan on August 14 of 1945. In the fall of 1945, the medical school was reconverted to a civilian student operation, but students in uniform were permitted to continue their education under the G. I. Bill of Rights. Those on the faculty younger than 35 were decommissioned.

In November 1945, the Indianapolis *Star* heralded the postwar growth of the university both at Bloomington and at Indianapolis. Both campuses, according to that newspaper account, would share in "general progress, in employment of teachers and

The Beginning of a Department of Radiology

scholars of distinction and addition of new courses of study in keeping with war experience and the state's rapid economic progress." Changing the general teaching program from an intensified wartime emergency operation to a more traditional routine in peacetime called for important readjustments throughout the medical school's operation. Of primary importance was the re-assembling of a faculty and the return to a traditional nine-month, two-semester teaching schedule.



Richard Datzman, M.D.

Earlier, the Medical Center had felt the effects of the Great Depression. Further restrictions to the school's growth had come with the outbreak of World War II when the number of available medical students was reduced and the faculty depleted. Then came the brighter side to the picture. When the Indiana University School of Medicine became a training site for the Army Medical Corps, students under this program were enlisted into medical service, and the tuition and other educational costs were paid by the United States Army. Dr. Willis Gatch, in his tenure as dean, from 1932 to 1946, was dedicated to seeing growth in the I.U. Medical Center despite an economic depression and a war. Although he had a very low budget, he increased the full-time faculty of the medical school.

After the war, Dr. Campbell began receiving numerous requests for radiology training from doctors who had completed their military service. Dr. Willard Smullen and Dr. Warren Fischer were the first of the I.U. graduates leaving military service to begin residencies. Resident appointments were given to Dr. Smullen in 1945, Dr. Fischer in 1946, and Dr. Jack Loudermilk in 1947, giving the I.U. program a first-, second-, and third-year resident staff. Other residents coming on at this time were Drs. John (Jack) Little, Maurice Manalan, Richard Datzman, James Lorman, and Phillip Lockhart.



Jack Loudermilk, M.D.

The first full-time radiology resident, Dr. Charles Roland, had been appointed in 1942. At the end of World War II, Dr. Campbell obtained certification from the resident review committee and, later, from the Joint Committee on Accreditation of Hospitals for probational approval of a three-year radiology residency, making Dr. Roland eligible for examination by the American Board of Radiology. In the X-ray area of the Clinical Building, from 1942 through 1945, Dr. Roland trained one-on-one with the radiologists working there.

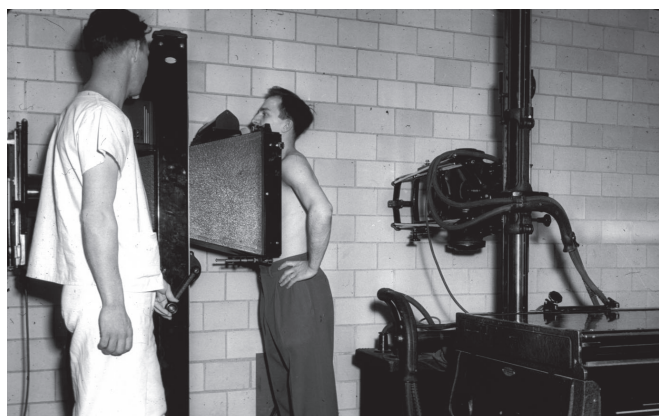
General Hospital was changing management. When its cost became excessive to the city, Indianapolis General Hospital in 1947 was taken over and operated by the Marion County government. The war effort had pulled able-bodied radiologists into the military and made a great demand for those not draft eligible. Dr. Marvin Hall, who had been assisting part time, had left the Beeler office to return to Arkansas, and in 1944, Dr. Crawford had taken an appointment in Wisconsin.



John Campbell, M.D. and a radiology staff member. Photo from Dr. John Campbell's collection.

Since the county hospital was involved in the education of military medical students, the army procurement division immediately had assigned Dr. Echternacht and Dr. Campbell to cover the radiology work at the hospital. Also Dr. Aaron Sullenger, who had been deferred because of a medical disability, took his second year of apprenticeship residency in radiology at General Hospital. When the war ended, Dr. Echternacht left to enter private practice, and Dr. Campbell was appointed chief of radiology at the university hospitals. In 1947, Dr. Smith and Dr. Robb became active heads of the General Hospital radiology facility on a part-time basis, with Dr. Sullenger as a full-time assistant radiologist.

Dr. Campbell's schedule involved working at I. U. until about 3:00 p.m. and then going over to General Hospital and helping Dr. Sullenger finish the fluoroscopy, therapy, and film interpretation each day. The standard workweek for salaried employees at that time was 44 hours, which included a half-day on Saturday. Some medical school classes were even held on Saturday mornings. Technicians' schedules were rotated to cover night emergencies and emergencies on Sunday.



In order to avoid having to pay for a registered technician to take emergency X-rays at night and on the weekends, Dr. Campbell hired senior medical students to do this in return for free room and board. It was necessary for him, first of all, to give each of these students a four-

70mm Chest, 1946. Photo from Radiology Department Archives.

The Beginning of a Department of Radiology

hour speed course in simple X-ray filming techniques. Of the dozen or so students he used for this work, all but one became radiologists. That one was Dr. Glenn Irwin, who later became dean of the I. U. School of Medicine. Another of Dr. Campbell's student helpers was Dr. Roscoe Miller, who later became a renowned GI radiologist on the I.U. faculty.

In the period of growth under Dr. Gatch, the radiology program developed both academically and clinically. During this time, new departments were being created out of the Departments of Medicine and Surgery. Recognizing the importance to the university of establishing a radiology department, Dr. Campbell informed Dean Gatch and the board of directors at the Medical Center that he would not be interested in continuing on the faculty unless a Department of Radiology was established. I.U. was the only medical school in the Big Ten Conference that did not have an independent academic Department of Radiology.

Following the conversion of the medical school from the military to a civilian operation in 1945, Dr. Campbell's academic appointment was renewed on the reassurance that radiology would be granted departmental status. The Department of Radiology came about officially in 1947.

A New
Medical School
Department

1947-1954



Once the new Department of Radiology was organized, it then assumed charge of all radiological activities, not only diagnosis and therapy for patients but also the education of undergraduate and graduate students in all areas of radiology and allied fields. Dr. Raymond Beeler became the first department chairman, but this was not a full-time position for him. He continued in his medical practice downtown and came out to the university periodically. Dr. John Campbell now gained the title of director of hospital radiological services at the Medical Center.

A full-time staff member, Dr. Campbell received a salary increase with his new appointment but still held an academic appointment of instructor. While these two men were congenial and could work well together, this new arrangement caused some difficulties. Because Dr. Beeler was not at the university daily, he did not directly participate in the delivery of radiological services or student and residency training.

Most of the responsibility for managing the department fell to Dr. Campbell, who lacked a chairman's authority. The radiology chairman served in a rather honorary position, as a representative of the department on the dean's executive council, along with other department chairmen, and at all public medical college functions. Dr. Beeler gave a free rein to Dr. Campbell, whose responsibilities in time would include departmental administration, budget requests, establishing an approved

In Memoriam of Raymond C. Beeler, M.D. 1888-1976

By Roscoe E. Miller, M.D.

Raymond C. Beeler, M.D., a 1910 graduate of Indiana University and a 1912 graduate of the University School of Medicine, died February 1, 1976 at the age of 88.



He was born at Charlestown, Indiana, and had lived in Indianapolis more than 60 years. He began private radiology practice in the *glass plate era* with his uncle, the late Dr. Albert M. Cole, in 1913, and retired in 1965. From 1950 until his retirement he had practiced with his son, the past President of the Radiological Society of North America, John W. Beeler.

During World War I Ray Beeler served in France with the U.S. Army's Eli Lilly Base Hospital 32. In 1919 he became radiologist at Long Hospital, and was appointed to the staff of the Indiana University School of Medicine where he served as a Clinical Professor, Associate Professor of Radiology, and the first Chairman of the Department of Radiology. Dr. Beeler had also worked in the x-ray departments of all the Indianapolis hospitals, and was a former consultant and member of the Dean's Committee at the Cold Spring Road Veterans Administration Hospital. He was one of the pioneer radiologists in Indiana and was elected the first President of the Indiana Roentgen Ray Society, and was a member of the Board of Chancellors of the American College of Radiology. He was also a member of the Indiana State Medical Society, Marion County Medical Society, and the American Medical Association. Dr. Beeler was a member of Phi Delta Theta and Phi Rho Sigma fraternities, and was a former member of the Columbia Club, Indianapolis Rotary Club, Indiana State Chamber of Commerce, and Indianapolis Chamber of Commerce.

He was a true radiological pioneer and was held in the highest esteem by all who knew him. A Memorial Annual Lecture has been named in Dr. Beeler's honor at Indiana University. His friend, Leo G. Rigler, M.D., gave the first of these lectures on November 5, 1976.

His survivors include his son, John W. Beeler, M.D., and three grandsons.

residency program, setting up a two-year radiological technician school, raising funds for new equipment, and recruiting faculty.

Dr. Beeler's role was not unique. I.U. at this time was among a small number of medical schools that still had not yet converted to full-time, hospital-oriented department chairmen. Even with the university medical center concept in medical education, medical school faculties still counted heavily on private practice physicians. During Dr. Beeler's chairmanship, the town radiologists continued to give weekly diagnostic X-ray presentations to medical students, and Dr. Campbell supervised the postgraduate resident training.

Before radiology was given departmental status in 1947, I.U. radiologists had held academic titles in a division of the Department of Medicine. Dr. Beeler, as an associate professor, was the senior member of the departmental faculty, having been there on a part-time schedule since 1919. He was generally considered the most reputable radiologist in Indiana and the best known nationally, having served as president of the American Roentgen Ray Society, the national organization of radiologists.

Two factors limited Dr. Beeler in directing a hospital-based academic radiology program. When he graduated from medical school, there were no radiology residency programs. While he had served an apprenticeship in the office of his uncle, Dr. Albert Cole, and had learned from working with other early prominent radiologists, he had not studied radiology in an academic setting. Dr. Beeler had a physical limitation, too. During his time in France in World War I, he had suffered severe radiation damage to both of his hands in fluoroscoping thousands of wounded soldiers.



Radiation damaged hand. Indiana State Medical History Museum Collection.

This new departmental arrangement, while it had its problems, did work. Dr. Beeler was, in Dr. Campbell's words, "a warm, very likable, soft-spoken personality who disliked controversy." Dr. Campbell, however, found a downside to that. When he attempted to pressure the dean or the board for various resources, funding, and budgetary items for more staff, he would be told that Dr. Beeler's approval of the department request had not yet been received.

In those days there was a tendency to be very conservative. Lack of available funds often made a difference in the supplies used. Radiologists didn't take additional films because of the cost of it. They made their own catheters, partly because the

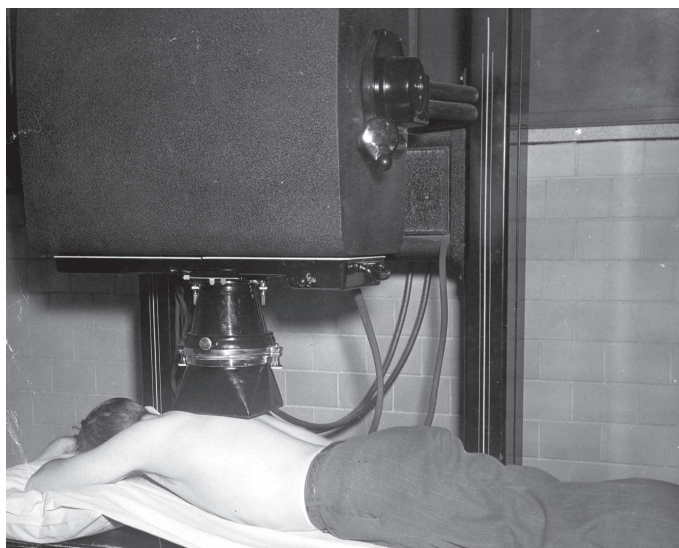
commercially-made catheters weren't always satisfactory but chiefly because the cost was high. Limited funding from the Medical Center at this time greatly influenced administrative policy. In 1948, the total budget to the Medical Center from the university was \$300,000. This amount was supplemented by grant money from pharmaceutical companies, Eli Lilly and Pitman-Moore, and the James Whitcomb Riley Memorial Association. At that time, the residents and interns at the university were on salary, and when they had completed their postgraduate fellowships, some of these persons accepted full-time, salaried appointments in the department.

Dr. Campbell's residency program was already launched with the young men who after the war came to I.U. for their postgraduate work in radiology. In the late 1940s, Jack Campbell was able to select other good candidates for the program. While most of their learning came from working with older residents, at the end of the day Dr. Campbell would go over the difficult cases with them. These sessions often lasted long beyond the usual quitting time. The residents found Dr. Campbell to be an excellent teacher, approachable and very helpful. He enjoyed being with them, and he and his wife Willie would invite the residents to parties in their home. In this period, the residents were earning about \$100 a month. Many of them in their second and third years took part-time employment during vacations.

By this time, X-ray burns were less frequent than in earlier years when the hands of persons taking

I arrived at the X-ray department in 1948. It was located in the basement of the Long Hospital. If you entered the west side of Long Hospital, you went down the steps, and on the right, I think, was a secretary's department, and on the left were two 250 kv therapy machines, and then further to the left were three or four diagnostic rooms. This was the extent of the X-ray department when I arrived. In those days Becky Sharp was the chief technician, and she was tall, slender, dark haired, quiet, but she was a gem. In the secretary's department was Phyl Gastineau. . . . She was taking our dictation. It was done on Edison dictographs, or dictaphones, which were round cylinders, black, wax, about eight inches in length. When we finished our dictation, we carried these to the secretary with two fingers through the opening. If you dropped it or scratched it, you were in trouble.

- Richard D. Datzman, M.D.



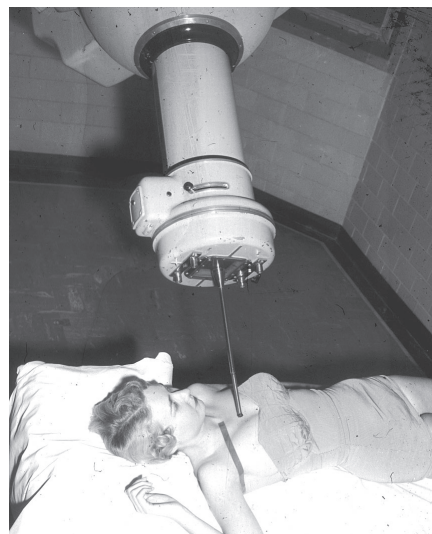
Man being X-rayed using shock proof equipment. Photograph #UA24-000742, UA 24, IUPUI University Library Special Collections and Archives.

A New Medical School Department

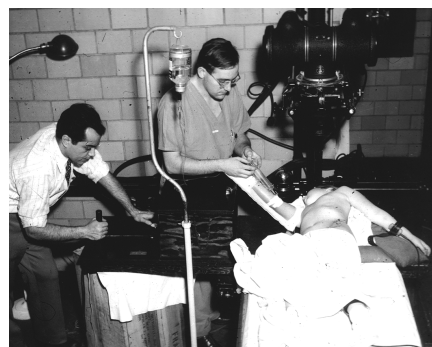
X-rays often became red and scaly, sometimes lacking a finger or two. While none of these postwar residents had any negative effects of X-rays, still they were tested for damaged hands. They were required to have impressions of their fingerprints taken both at the beginning and the end of their residencies.

The radiology facilities in the Long Hospital Clinical Building were expanded in 1948 when a one-story wing was added, extending into the parking lot to the east. Approximately 5,600 square feet of floor space was added, allowing for three additional rooms for the diagnostic procedures and five new rooms for treatment. The genitourinary section was enlarged, and a new radiation therapy section was added as well as classrooms and offices. With this additional floor space, the new diagnostic rooms, and modernized X-ray equipment, the radiation therapists could accomplish more, responding to the growing importance of X-ray and its use in helping cancer patients.

This radiology department expansion marked the beginning of a continued growth in physical facilities so critical to the development of a strong academic program. At this time, too, obsolete X-ray equipment was being replaced with new shockproof, modern units. With this additional physical space and equipment, the university's standing among medical schools in the United States was rising. Clinical services were also expanding. In 1948, the number of examinations and treatments of patients in the Medical Center's X-ray department had increased 60% in the past five years. With increases in the number of patient examinations and the growth in the department's services, new equipment and supplies were welcomed. However, even with these positive additions to the department, working conditions for radiologists and their staff assistants were often



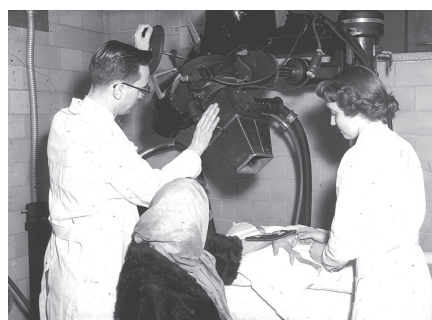
1947. Radiology Department Archives.



1948. Radiology Department Archives.



1948. Radiology Department Archives.



1948. Radiology Department Archives.

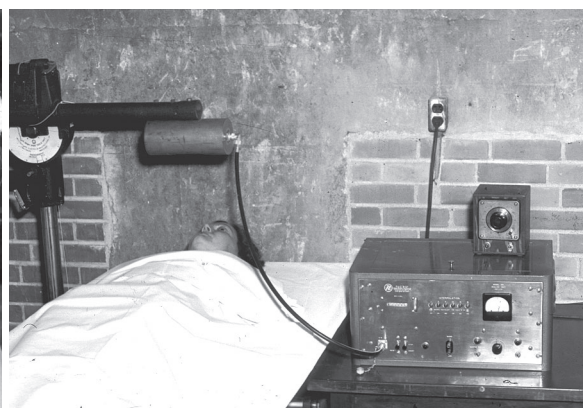
challenging. Lack of money continued to call for conservative measures.

In the department's quarters in the basement of the Clinical Building, the staff was small. There were only two full-time radiologists, Dr. Campbell and Dr. William Loehr. Much of the medical school teaching then was done by senior residents, on-the-job training with a great deal of responsibility. Dr. Campbell taught students, and he also was invited to appear at many teaching conferences, gaining a national reputation as a very knowledgeable radiologist. At that time, of the three years of radiology residency training, one year was in radiation therapy. There were only two years of diagnostic radiology.



A technologist X-rays a patient. IUPUI University Library Special Collections and Archives.

About 1950, Dr. Campbell launched the weekly Friday evening seminars. These began at 4 p.m. with a one-hour review session of genitourinary cases with the faculty of the GU department. Initially, the GU staff was made up of attending doctors in private practice. Later, two full-time GU faculty participated. At 5 p.m. one of the residents gave a prepared lecture. At 6 p.m. the group adjourned for dinner, which also served as a form of staff meeting for the faculty, and at 7 p.m. a lecture was given by an invited visiting academic radiologist. At 8 p.m. Dr. Campbell conducted a film-reading session on unknown cases.



A patient drinks in preparation for a thyroid scan, 1947. Photo from Radiology Department Archives.

A New Medical School Department

These cases were submitted by radiologists at the Medical Center or from outside sources, from physicians in private offices or in Methodist Hospital, St. Vincent Hospital, and even hospitals as far away as Richmond, Lafayette, Ft. Wayne, Bloomington, Evansville, and Louisville. This seminar grew in popularity each year as more and more radiologists were trained and entered practice throughout the state. It helped establish good public relationships with radiologists in the surrounding area, and it facilitated Dr. Campbell in his practice of inviting academic radiologists from other institutions throughout the country.

The film-reading session was a Socratic type of teaching, an excellent teaching technique. Dr. Campbell sat up front with a resident on either side of him. They would discuss the problem case that had been presented. These were supposed to be proven cases. Because Dr. Campbell was so congenial, the residents did not feel uncomfortable. While they may have felt a bit nervous about sitting up front with the department chairman, they had no fear that he might make fun of them if they made errors.

These Friday night meetings became very important to the residents and to staff and visitors as well. Many of the local doctors would come out to the university, bring films, and stay for the talks, particularly in the evening to participate in the film-reading session. The Friday night meeting was the teaching program at the time, and it

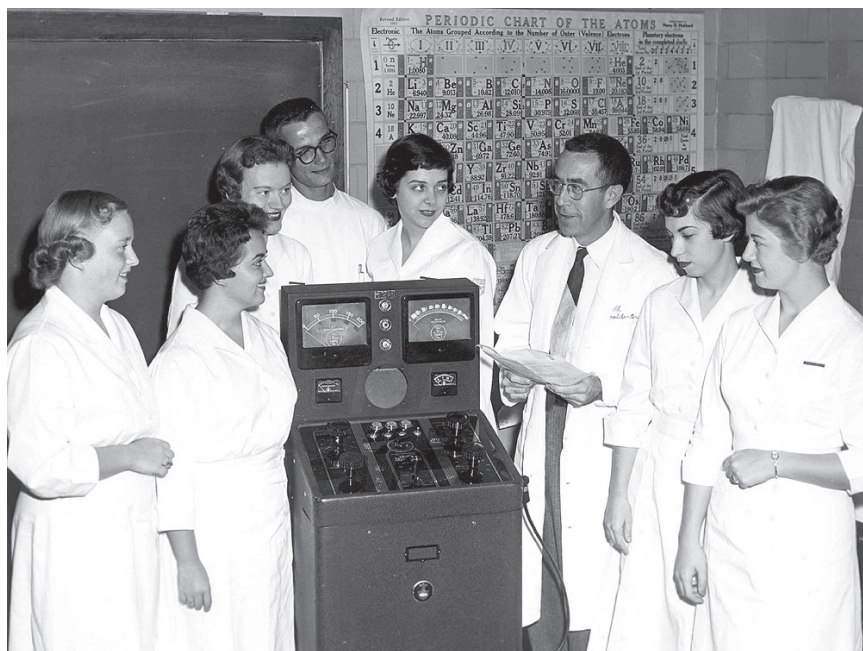
was regarded as a good one. Another innovation, the annual course in diagnostic radiology, was dedicated each year to a different subspecialty of radiology. It sponsored presentations by the I.U. faculty and by prominent teaching authorities in that particular field from other areas of the United States and abroad.



Technician assisting a radiologist perform an exam using a tracer being drank by a patient. Photo from Dr. Jack Campbell's collection.



Enjoying a break, 1952. Radiology Department Archives.



Dr. Jack Campbell demonstrating new equipment for technologists. IUPUI University Library Special Collections and Archives.

Outside speakers were brought in for radiology meetings, and I.U. department members themselves were participants in programs outside the school. Dr. Joseph L. Morton, of Ohio State University, recognized widely for his work with radioactive cobalt as a substitute for radium in treating cancer, came as a guest of the I.U. radiology department in 1952 for a series of conferences planned by the department, with the support of the Indiana Cancer Society. Other medical organizations, too, brought in well-known speakers. Dr. John Campbell was one of three presenters of scientific papers “of general interest” when the Indiana Section of the International College of Surgeons met at the Lincoln Hotel in the spring of 1955.

There was an increasing need for well-trained, experienced personnel to assist the I.U. radiologists. In the early 1940s, there were three full-time radiographic technicians in the radiology division, all of whom had been trained elsewhere in the country. With the growth of radiology, the need for more technicians became apparent. At first, a one-year, apprentice-type training program was initiated, working with only one or two students at a time. This teaching was done by the senior registered technician, Edith (Becky) Sharp.

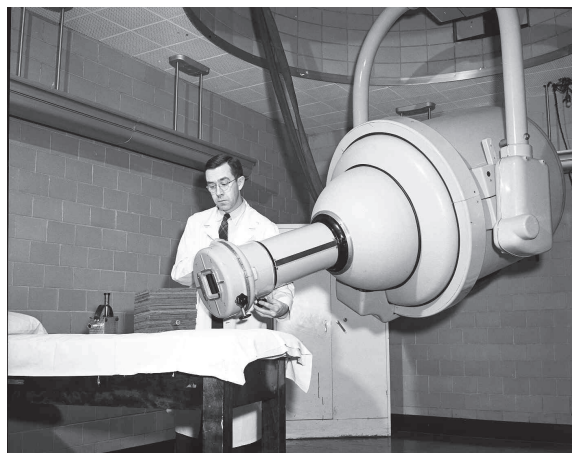
Then, in 1949, under the department’s supervision, a one-year course in X-ray



Radiology Department technician handling radioactive material. Photograph #UA24-000729 N, UA 24, IUPUI University Library Special Collections and Archives.

A New Medical School Department

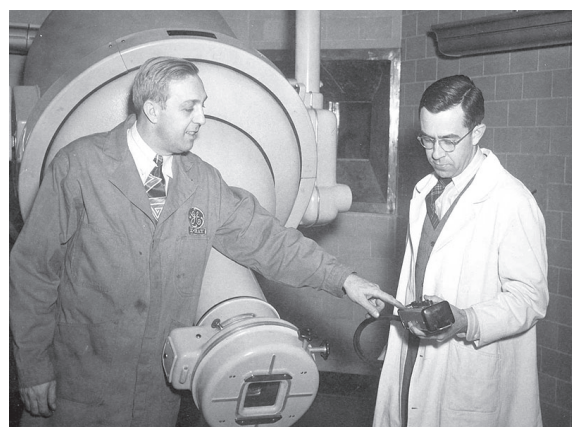
technology was begun. Seven students graduated in the first class. In this 12-month course, technology students spent 44 hours each week in both classroom and practical experience, supervised by the radiology staff and graduate technicians. They gained instruction in the different techniques of X-ray examination and therapy as well as in departmental routine. The course also included instruction in the fundamental principles of the medical profession.



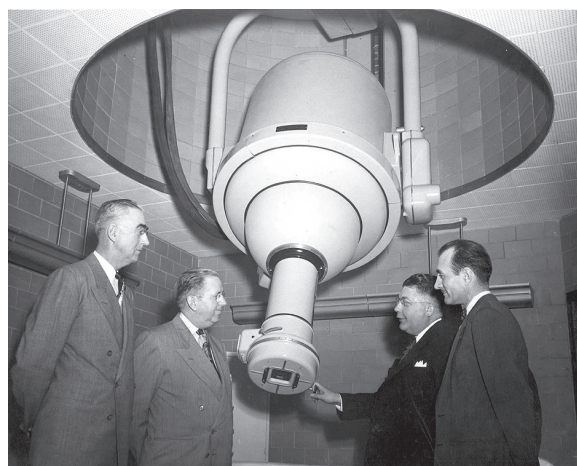
John Campbell and the new GE X-ray machine. Photograph #UA24-000731, UA 24, IUPUI University Library Special Collections and Archives.



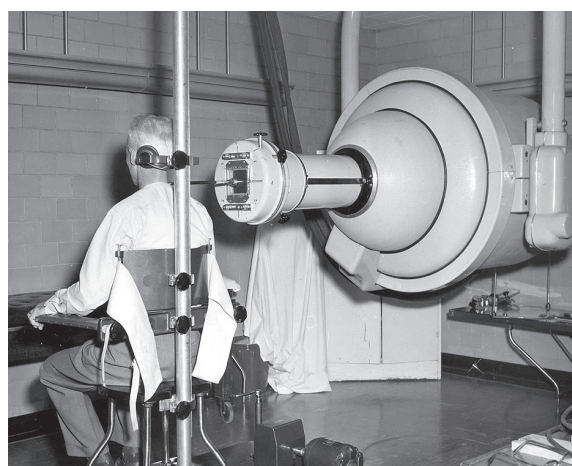
Dr. John Campbell (left) and IU president Herman B Wells (center) accept a donation from a representative of the Lions Clubs of Indiana. Photograph #UA24-000761, UA 24, IUPUI University Library Special Collections and Archives.



A GE X-ray technician discusses an X-ray machine with Dr. Jack Campbell. Photograph #UA24-000735, UA 24, IUPUI University Library Special Collections and Archives.



Representatives of the Lions Club examine the new General Electric X-ray. IUPUI University Library Special Collections and Archives.



The new therapeutic X-ray machine in use. Photograph # UA24-000736, UA 24, IUPUI University Library Special Collections and Archives.

At the successful completion of this training, the graduates were awarded certificates. An extra year of clinical graduate training was available to students who completed the course satisfactorily, and three salaried junior technician appointments were offered for those qualifying. In their second year of their training, the tech students completed the qualifications required for the examination of the American X-Ray Technicians Registry. In 1951 the registry of X-ray technicians had advanced the requirements for a Registered X-ray Technician certificate from one to two years.

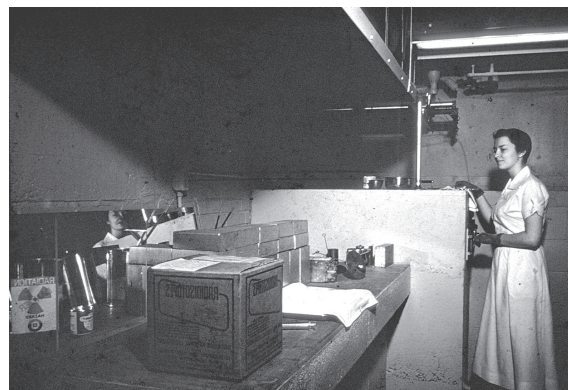


Photo of technologist working in the nuclear medicine area, early 1950s. Photo from Charles Helmen, M.D.

The six members of the second X-ray technician class completed their instruction and clinical experience, and a new class of 18 enrolled for September 1951. By that time, Dr. Campbell as chief radiologist was supervising the course. Although, this 12-month course did not provide credit toward a university degree, it was expected that in time a credit course could be offered, combining six semesters of preparatory work at Indiana University and three semesters of work on the Medical Center campus, leading to a Bachelor of Science degree. This I.U. course in X-ray technology was



The entrance of Long Hospital, ca. 1950s.
Photograph #C2.67.3-017, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

established as a part of the university's Allied Health Service, and space for technician instruction was provided in the expanded radiology facilities in the Clinical Building.

It was in the post World War II era that the department first began its work in nuclear medicine. At that time, the term was isotopes. The explosion of the atomic bomb had created a great interest in the bomb's positive and negative applications. The I.U. radiology department in 1946 had submitted a request to the Manhattan Project for supplies of various medical isotopes prepared at Oak Ridge, Tennessee, as a by-product of bomb manufacture. These drugs, atomic medicines taken orally, were to be used in treating certain diseases that were believed responsive. They would serve as



Dedication plaque, 1949. Plaque honoring the Lions Clubs of Indiana for their support to the Department of Radiology. Photograph #UA24-000767, UA 24, IUPUI University Library Special Collections and Archives.

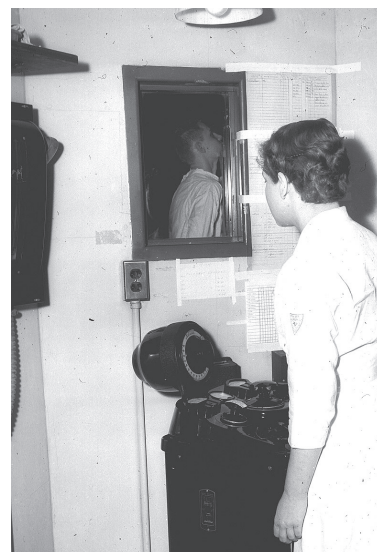
the equivalent of an X-ray treatment. At the Medical Center, this atomic medicine would be used for treating goiter and two forms of cancer of the blood.

Dr. Campbell explained to a writer with the *Indianapolis Star*: “We are proceeding altogether cautiously without making any promises or getting anyone’s hopes up.” He said that there was no conclusive evidence on which anyone could predict any significance in cancer treatment. At Oak Ridge, Dr. Campbell had taken courses in the medical use of nuclear energy so that he could help set up I.U.’s first radioisotope diagnostic laboratory. Also, this atomic energy experience had a secondary benefit for him. Because he had learned there how to dissolve radon in Vaseline to make a radioactive ointment emitting alpha rays, Dr. Campbell was able over the years to treat Dr. Beeler’s hands with this radon ointment.

In 1947, radiologists at the medical school began experimenting with isotopes for radioactivating drugs which could be used in the diagnosis and treatment of cancer and other illnesses. Dr. Campbell acquired a special kind of Geiger counter which could be used to trace the radioactive chemicals as they passed through the blood stream and to locate concentrations in diseased areas.

After the department acquired the Geiger counter to measure the dosage and to measure the activity within the thyroid, nuclear medicine at I.U. really began. Isotopic study was included in the three-year academic program and in time became an elective course for medical students. To make residents and practicing radiologists better informed in this new area of nuclear medicine, a postgraduate course, “Radioisotopes in Clinical Medicine,” was offered in 1954. A series of six four-hour sessions was held on consecutive Wednesday evenings. Enrollment had to be limited because of the laboratory facilities.

In time, this new developing field called for additional space in medical school buildings. Dr. Campbell began a nuclear medicine section, which was located in the Long Hospital sub basement, next to the vault.



1951. Photo from Radiology Department Archives.

The department in 1950 added the General Electric one-million-volt tank therapeutic X-ray generator which an endowment of the Lions Clubs of Indiana's Cancer Control Fund had made possible. This machine was purchased from the War Assets Administration as an industrial unit and then converted into a medical unit by the General Electric Corporation. To house the generator at I.U., a room was especially designed with an overhead balcony which would facilitate the use of a ceiling tube and would also allow space for the heavy generating apparatus and hoisting crane. Another feature of this room was its manually-operated four-foot swinging door with a one-quarter-inch built-in lead protection. This was an option preferable to the cumbersome mechanically-operated heavy lead doors.



Jack Campbell, M.D. second from left. Photo from Dr. Jack Campbell's collection.

In the first year and a half, 135 patients suffering from various forms of malignant neoplastic disease were treated by this one-million-volt X-ray therapy. Beneath the room housing the million-volt generator was a room used for irradiating research animals and biologic and genetic materials. Through a hole in the floor of the generator room, an X-ray tube could be lowered into the research area.

At the close of World War II, the federal government had filled warehouses with brand new radiological equipment, which could be obtained by public institutions for only the cost of shipping. Dr. Campbell had taken advantage of this opportunity in equipping the new department expansion at Long Hospital. Equipment for Riley, the V.A., and the Marion County General Hospital was paid for by those institutional budgets or philanthropies. Indiana Lions

Cold Springs Road Veterans Administration Hospital, 1944. Photograph Bass, #224466-F from the Indiana Historical Society Archives.





David Gastineau, M.D.

Clubs had raised large sums of money to pay for therapeutic equipment, including the million-volt cancer treatment unit. With the fund-raising efforts of the Lions Clubs of Indiana, I.U. acquired new radiology and nuclear medicine units, the department's first automatic film processors, image amplifiers, cineradiology units, and angiography and tomographic devices.

In recognition of their efforts to benefit the department's work, Indiana Lions Club members were invited to an open house held in the department in December 1951. By that time, approximately \$42,000 had been paid toward their pledge of \$50,000 to equip the department. A Lions Club gift of \$5,500 in 1955 contributed to the expansion of cancer diagnosis and treatment with a special diagnosis unit, combining both X-ray and fluoroscopic facilities for examinations for cancer. Both Dr. Campbell, as the Medical Center's chief radiologist, and Dean Van Nuys publicly praised this donation. I.U. at that time was a key therapy center in Central Indiana and even beyond. In 1952, Dr. David Gastineau had become I.U.'s first full-time radiotherapist.

In August of 1950, the Indiana Roentgen Ray Society held its only meeting of the year in the Department of Radiology at the Medical Center. As a member of the Indianapolis Committee for Medical Services for A-Bomb Disaster, Dr. Lester A. Smith had suggested that such a meeting be held. He showed a film on the medical effects of atomic bombing, and that was followed by a discussion of the radiological aspects of medical care. It was generally agreed that there should be radiological representation on all city and community committees. Dr. Campbell, who had done graduate work at Oak Ridge, was a member of the Indiana State Committee for A-Bomb Disaster.



Joan R. Hale, M.D., the department's first female resident, served from 1952 until 1955.



The I.U. radiology department was gaining attention. Locally, the Indianapolis *Times* reported in 1952 that "the Radiology Department's new medical radioisotope laboratory was a first of a kind in the state. It is especially designed for safe handling and storage of radioactive isotopes, forms of

Diagnostic X-Ray unit, early 1950s. Photo from Charles Helman, M.D.'s collection.



1950 group photo of radiology residents featuring the Medical Center's director of hospital radiological services, Dr. Jack Campbell, holding a Coolidge Tube. (bottom l-r) Fred McCrea, M.D., Richard Datzman, M.D., Jack Campbell, M.D., James Lorman, M.D., and John W. Wilson, M.D. (top l-r) James Durlacher, M.D., John S. Scott, M.D., Donald Vivian, M.D., David Gastineau, M.D., and Ralph Levin, M.D.

chemical elements which have been made radioactive by methods developed in recent atomic research.”

Recognition from two national organizations also rewarded the Department of Radiology at this time for work being done there. The American Roentgen Ray Society at its meeting in Washington, D.C., awarded its Certificate of Merit for an exhibit made for the Department of Radiology by the Medical Center's Illustration Department. A second exhibit made for the radiology department was voted “the best exhibit of the year” by the American Academy of Pediatrics in Toronto. That exhibit was promised a place of honor in the Pediatrics Section at the American Medical Association the following June.

Several I.U. radiologists were active in local and state organizations. In 1954, for example, Drs. Samuel Morchan, Harold Ochsner, and John Campbell were among Indiana Roentgen Ray Society members statewide who were available as consultants concerning problems in initiating and carrying out routine chest X-ray examinations. The chest X-ray was important and was required for everyone who worked at a hospital. Also, it could involve patient admissions, food handlers, and teachers as

well. Persons needing an X-ray went to hospital outpatient departments because that was where the equipment was, not in doctors' offices. As a result, I.U.'s X-ray department saw many outpatients. There were days when 200 people in gowns were lined up in the hallway, and the technicians would take chest films all day. This program was generated in an effort to detect tuberculosis and cancer.

In 1952, Indiana University gained a very important addition to its Medical Center with the opening of the new 500-bed Veterans Administration Hospital on West 10th Street. For years, the V.A. had operated a convalescent hospital for tuberculosis patients, located on Cold Springs Road. Dr. Beeler and his associates had done film interpretation on these patients on a contractual basis. Establishing a Veterans Administration hospital near downtown, on land adjoining the Medical Center, appeared to be in keeping with a national policy of locating veterans' medical facilities adjacent to medical schools. This location afforded immediate access to both professional and research sources.

Dr. Ralph Levin was appointed full-time chief radiologist at the new Veterans Administration Hospital in 1952. A very competent physician, he contributed to the I.U. academic teaching program in many ways. The radiology department at the new V.A. consisted of four radiographic rooms and one therapy room in addition to the one radiographic unit at the Cold Springs Road Veterans Hospital.

Staffing the V.A. Hospital radiology division was a problem in the early 1950s. The Veterans Administration Hospital was experiencing increasing difficulty in hiring full-time medical staff, and because of the frequent frustrations in dealing with the Veterans Administration bureaucracy, faculty members saw the V.A. as a less attractive assignment. The result was a contractual agreement with the university for the merging of staffs in all departments. This, in turn, provided the university radiology department with much needed discretionary funds with which it could acquire additional personnel.

In the beginning, there were no residents at the Veterans Administration Hospital on 10th Street because the program was incomplete for accreditation. For a year after the war, Dr. Chester Stayton, Jr., had been a resident at the Cold Springs V.A. hospital. While he was not officially an I.U. radiology resident, he had



1954. Photo from Radiology Department Archives.

come into Dr. Campbell's department for three months since the V.A. had no therapy department. He later conducted film-reading sessions at the university for ENT residents.

As the I.U. radiology department residency teaching program was extended into the 10th Street V.A. Hospital and then into General Hospital, the department encountered some real management problems. Neither the V.A, nor General could meet the recently upgraded requirements of the residency review committee for resident training without an affiliation with a more diversified, fully-approved program such as that of I.U.

At Marion County General, Dr. William Tosick became the hospital's full-time radiologist, its chief of radiology in 1952. He was also very much interested in academic radiology and contributed greatly to the teaching program. Dr. Tosick appointed several residents at General and arranged for them to attend the resident teaching programs at the Medical Center although no clinical rotation existed. While the university and V.A. departments were now fully integrated academically, the General Hospital department remained an independent affiliated program.

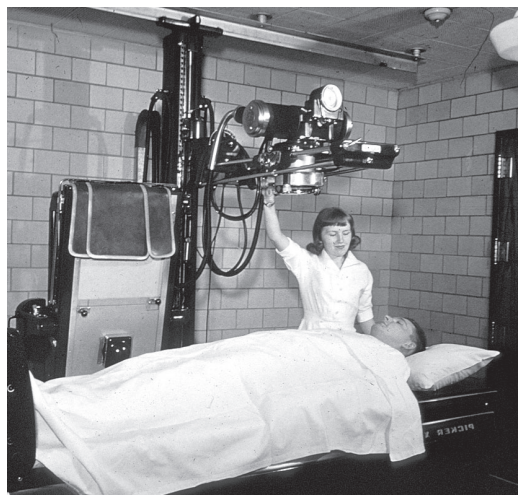
After a few years, the residency review committee failed to renew the certification of an independent residency program at Marion County General Hospital. Dr. Campbell had long crusaded for fully affiliating the V.A. and the General Hospital radiology functions into the I.U. program. When Dr. Levin left the V.A., Dr. Campbell negotiated with the Veterans Administration to furnish complete



Photo from Charles Helman, M.D.'s collection.



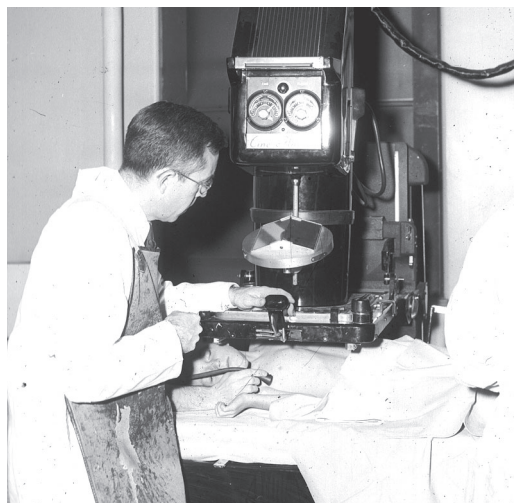
Intensified-imaging fluoroscopy unit. Photo from Charles Helman, M.D.'s collection.



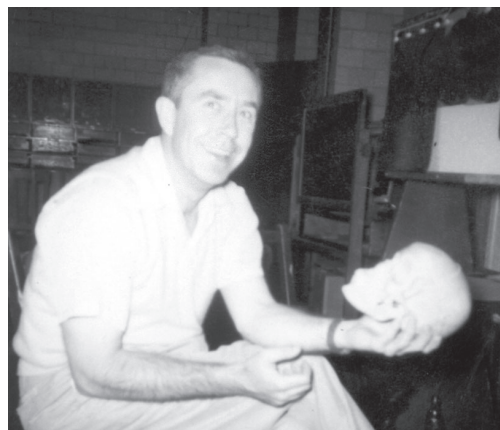
Diagnostic fluoro x-ray unit, ca. 1950. Photo from Charles Helman, M.D.'s collection.



Nuclear Medicine. Photo from Charles Helman, M.D.'s collection.



John Campbell, M.D., 1954. Radiology Department Archives.



Unpacking in the new radiology area at Indiana University Hospital, 1955. Photo from Dr. Jack Campbell's collection.

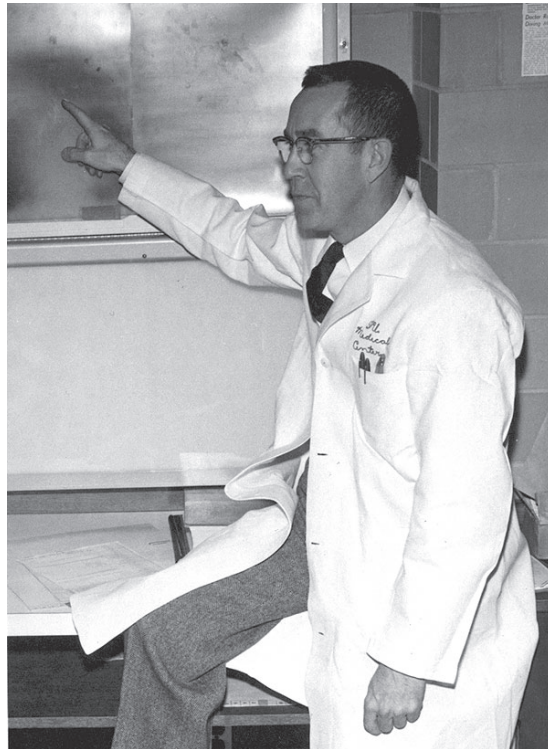
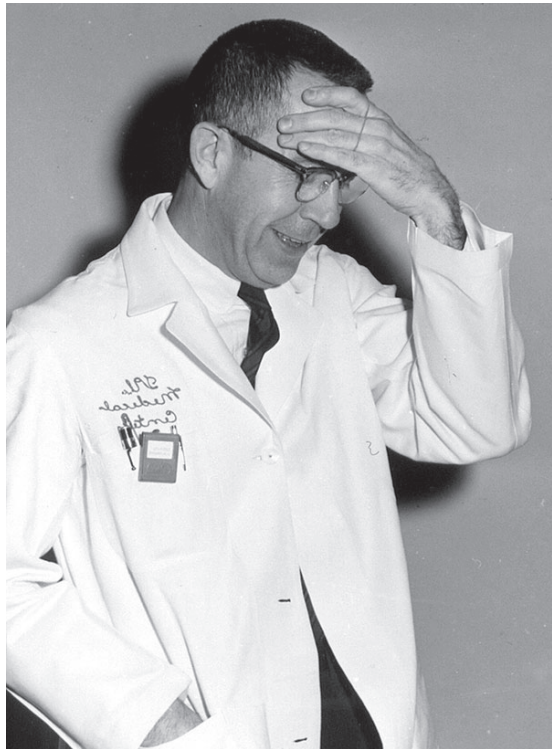
radiology services on a contractual basis, utilizing the I.U. faculty and residents. Over the course of the next 15 years or so, during his term as chairman, various members of I.U.'s full-time faculty would serve as chief radiological supervisors in the V.A. program, with members of the residency program rotating through the V.A. hospital under three or four programs.

After Dr. John Campbell succeeded Dr. Raymond C. Beeler as chairman in 1955, Dr. Beeler remained on the faculty, serving as professor emeritus. Dr. Campbell's credentials attested to his being an excellent choice for the first full-time chairman of the Department of Radiology. At I.U., Dr. Campbell had worked in many areas of radiology. He had helped develop radiotherapy and nuclear medicine there. He had supervised pediatric radiology cases from Riley Hospital and for a time was acting head of General Hospital's radiology department. He later was chief of radiology for the university hospitals. Outside I.U., he had served as a radiology consultant and frequently was invited as a participant or speaker at medical meetings throughout the country.

The
Campbell
Years

1955-1970





Jack Campbell, M.D. in action. Photos from Dr. John (Jack) Campbell's collection.

When Dr. Campbell became the medical school's first full-time radiology chairman, the department, although it had increased in number, was still small. It continued to depend on private practice doctors. By 1954 there were four full-time radiologists with a consulting staff of 10 attending radiologists and a part-time physicist. In addition, there were six graduate technologists and a clinical staff of nine. The residency staff had increased to 12 and the technicians' enrollment to 40. Dr. Campbell's first full-time staff appointment was Dr. James Lorman, a former resident.

In his Medical Center history, Dr. Glenn Irwin wrote: "There was an urgent need to increase the size of the full-time faculty in both basic sciences and clinical departments. To attract the latter it was necessary to pay a small salary while permitting a limited private practice income. Patients were seen by referral only and were treated only at the Medical Center, which had a very limited number of private hospital rooms."

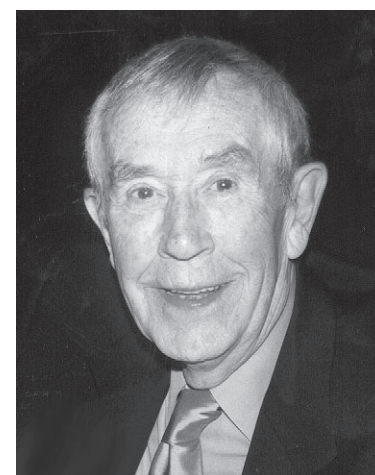
Jack Campbell's nearly 15 years in the department had given him a great advantage. He had already become well known nationally. He was recognized as an excellent clinical radiologist as well as a committed and effective teacher. He was skilled in using his knowledge and experience as a radiologist in teaching the residents. His preferred technique as a teacher was not to tell students what they should be seeing but to ask them to find the answers, and he encouraged others to teach this way. Residents and medical students liked him and liked his sense of humor.

Dr. Campbell's personality was another great asset for him. A man with a robust sense of humor, he enjoyed interacting with other people. One of his colleagues described him as "the quintessential entertainer" as well as an

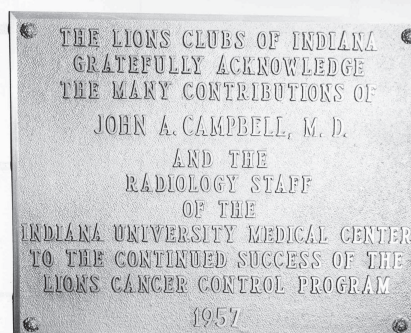
Plaque put up by the Lions Clubs of Indiana to honor the work of John Campbell and the staff of the Department of Radiology. Photograph #UA24-000768, UA 24, IUPUI University Library Special Collections and Archives.



John A. Campbell, M.D.
Photograph #P Campbell, John A. 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.



John Campbell, M.D. in 2000.
Photo from Mervyn D. Cohen, M.B., Ch.B., M.D.'s collection.



“extremely talented professional and academic.” As a lecturer at teaching conferences, he was well remembered for his quick wit. He worked hard, very supportive of his staff and students and ready to help wherever he could. Some who were in the department at that time, too, remember his frugality in managing the department, stemming perhaps from earlier years when money was even tighter, or perhaps reflective of his Scottish ancestry. Dr. Campbell’s approach to managing the department was informal and, in a sense, paternalistic. There were discussions in staff meetings, but when the vote came, he tended to do what he felt needed to be done regardless of other people’s positions.



An avid music lover, Jack Campbell, M.D. played the clarinet in a small hospital orchestra. Photo from Dr. Jack Campbell’s collection.

As radiology department chairman at I.U., he had need of help which Dr. Beeler’s experience could not provide. Jack Campbell then turned to his longtime friend and close colleague, Ben Felsen, who had become chairman of radiology at the University of Cincinnati medical school, their alma mater. Dr. Campbell valued Dr. Felsen’s advice. They saw each other frequently and discussed solutions to their similar problems.

The style of their residency programs became quite similar, particularly in clinical teaching where both of them encouraged the development of diagnostic insight by presenting cases to students and faculty alike as unknowns rather than using the more

traditional didactic presentations. In keeping with this philosophy, Dr. Campbell had developed the noon T-conference as a teaching tool. Whenever Dr. Felsen was in Indianapolis, he would come to the school and give a T-conference type of diagnostic presentation, and Dr. Campbell did the same when he was in Cincinnati. Residents of both schools were invited to attend any special programs or conferences at either institution tuition-free.

Dr. Campbell also relied on colleagues at the University of Minnesota, the University of Michigan, and the University of Chicago who had developed excellent radiological teaching programs. He visited these schools, attended postgraduate courses there, and invited these men to Indiana University as visiting professors. The I.U. program relied on I.U. people. In his faculty appointments, he tended to choose academically-inclined resident graduates. Funds for the residency program and for equipment, departmental costs, and faculty salaries were hard to come by. Even so, the 1950s and 1960s saw an increase in the number of faculty and staff. The time was right for new perspectives on radiology.

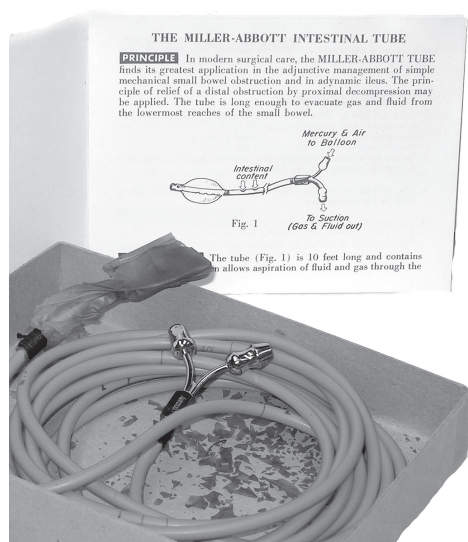
In the years following World War II, the I.U. medical school had begun to see great changes. Not only for the newly-created radiology department but for other Medical Center departments as well, 1947 had marked the beginning of a new era. Dr. Irwin in his history writes that in the 20 years after the close of the war, the school became more comprehensive, more diverse. Medical student enrollments nearly doubled in that post-war era, from 129 students in 1947 to 216 students in 1964. There was a similar growth in the number of university faculty members; more full-time faculty were hired. New teaching programs were developed and expanded. The university was giving more attention to graduate programs and research.

In 1956, Dr. Roscoe Miller came to I.U., having completed his training at the University of Chicago and served on the staff there. The next year, Dr. Eugene Klatte joined the department as a James Picker fellow in cardiology. A former I.U. resident in radiology, Dr. Charles Helmen in 1959 received a faculty appointment and, in addition, became director of the X-ray technology school. This was a very good beginning.

Roscoe Miller's impact on the radiology department was remarkable. Many, many stories are



Roscoe E. Miller, Associate professor, Department of Radiology, June 1964. Photograph #P Miller, Roscoe Earl 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.



A Miller-Abbott Intestinal Tube from the Radiologic Sciences Programs' collection. The tube is shown in its original box, in 2004, but is showing signs of disintegration.

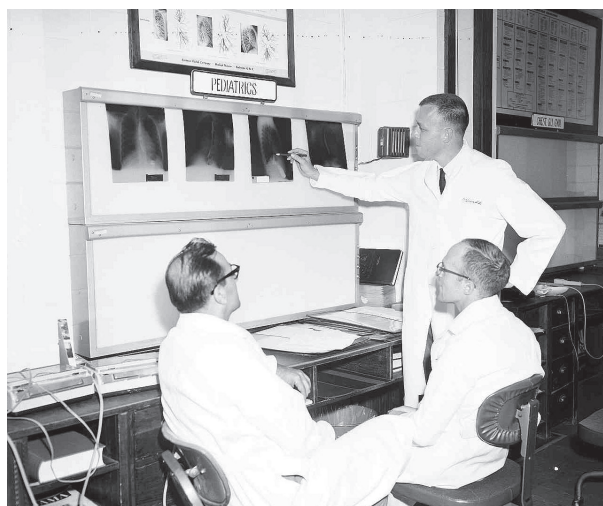
told about him. He was irascible but likable and highly regarded as a radiologist. An outstanding teacher, he was a great influence on the medical students and residents who worked with him. Dr. Miller was considered the king of fluoroscopy.

His specialty was gastrointestinal radiology, and his wide reputation grew out of his research in the development of the barium enema. He developed key equipment for air-contrast colon examinations, which is today used all over the world. His device was made to facilitate the retention of the barium solution being injected into the colon and small intestine in a retrograde enema.

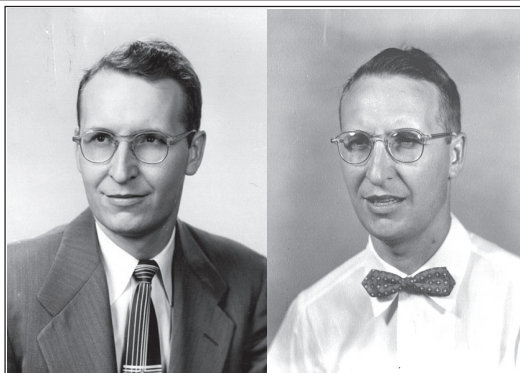
The Miller tube featured a metal device, perhaps a foot long and an inch wide, through which passed a large bore triple-lumen rubber tubing fitted with two rubber balloons. These were inflated and deflated by pumping air through connecting rubber tubing using a bulb syringe. One balloon fitted inside the rectum and the other on the outside, giving a tighter, virtually leak-proof fit. This permitted sequential filling and emptying of the colon and small bowel with barium and air without inconvenience and contamination of the filming unit or the patient.

In addition to his innovation of the small bowel retrograde enema, he also invented large bore tubing and mixing apparatus for preparing the barium. Dr. Miller can be credited, too, with improving holding devices that could be fitted to X-ray tables for obtaining cross table decubitus views.

In the beginning of a resident's rotation, Dr. Miller would take the time to demonstrate his technique. He would generally leave residents on their own, but periodically he would review films with them and always devoted a good portion of his time to teaching. For him, every film had to be just as he wanted it. Residents in advance had to



Physicians viewing X-rays. Photograph #UA24-000781 N, UA 24, IUPUI University Library Special Collections and Archives.



Earl Brown, M.D., radiology resident.

I was a resident in the Department of Radiology at I. U. Med Center from 1956 to 1959. At that time, we were doing hand developing of films in the darkroom, and Huey Watts. . . was in charge of the darkroom. He had a rhythm type of way he did the films. He would count as he put the films in the developer and then in the water and so forth. He had sort of a rhythm. You could almost see him counting the beat as he developed the films. In fact, Huey was quite a fellow. He was also a musician, and he used to do a gig down in Columbus, Indiana, at the

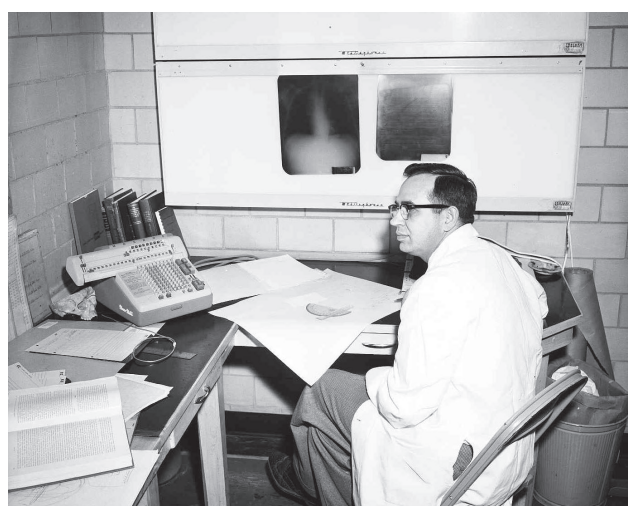
Holiday Inn, and then he'd get back to the X-ray department about two o'clock in the morning. He would lie down on a gurney, take off his tux, and then put on his blues and get into the darkroom. He'd have about two hours sleep. We used to kid him about how did he stay awake during the day, but Huey always managed to do it. We never know how he did it, but he did it.

-Earl Brown, M.D.

be able to draw on a blackboard what each image should look like, showing for example how it would look, in relation to the spine.

Although there had been progress in staffing and in academic programming, as far as equipment was concerned the department was lacking. It was, as Earl Brown, a late-1950s resident put it, "kind of stone age radiology." Early on, the primary teaching facility was in the basement of the Long Hospital Clinical Building. At first, most of the images were read on a bank of three view boxes. Later, it became four and, still later, four over four view boxes. Sometimes two of the view box's three light bulbs were not functional. Trying to make a diagnosis under those conditions was difficult, to say the least.

When Dr. Miller came on staff, he pressed the medical school administration for more money to update equipment. He wanted view boxes with cracked glass replaced with new ones. He wanted a sufficient number of dictaphones so that first-year residents no longer had to type their own reports. Because of Dr. Miller's persistence, the department gained better and more modern equipment, such as new fluoroscopy units.



A radiologist, Hooshang Taybi, at the viewbox. Photo shows a Monroe calculator which was routinely used by radiologists in the department. Photograph #UA24-000732 N, UA 24, IUPUI University Library Special Collections and Archives.



(left) Radiology check in and film loan. Photo from Dr. Jack Campbell's collection. (right) Roscoe Miller's new filing system. Photo from Charles Helman, M.D.'s collection.



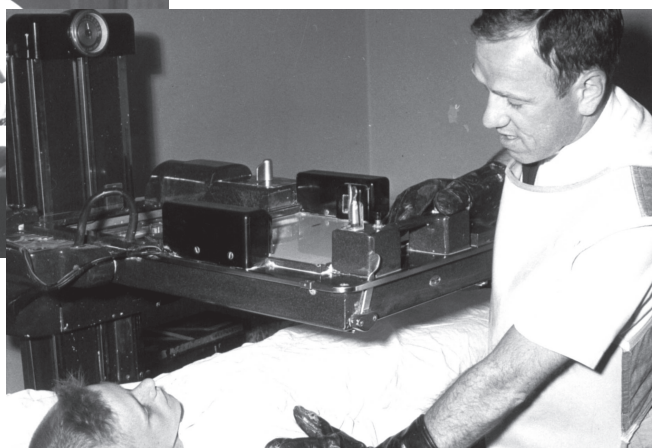
Another much appreciated project led by Dr. Miller was the reorganization of the X-ray film library. Brown and other residents at that time helped him sort through stacks of films dating back nearly 20 years. They worked many hours down in the dark basement file room which was lighted by only a single bulb hanging by a cord from the ceiling. When the new library was set up, the films were filed by a terminal digital system rather than a numerical sequence. The film's number was broken into subsegments, and filing was done by the number's last two digits and then by the last four digits and then by the last six. With a color-coding of the last number of the year the film was taken, it was easy to pull out a particular film. Thanks to this work by Dr. Miller, I.U. acquired an excellent film library.

The university's residency program was a good one. The department was able to attract bright young medical school graduates. In the late 1950s, I.U. had 12 residents, four for each of the three years. In their three-month rotations, residents moved from



Above, resident Jay Hammer, M.D., explains the x-ray therapeutic needs of a patient to Kathlyn Cosby (left), an X-ray technician. The radiology department at the time was equipped for both ortho-voltage and superficial therapy in cancer treatment.

Below, radiology resident, Joe Cronin, M.D., readies a patient for a fluoroscopic examination of his chest. Cronin is one of three radiology residents in 1964. Photos from General Hospital's *Life In General* July 1964 issue.



the department in Long Hospital to the 10th Street V.A. Hospital and to General Hospital to cover services. The department installed diagnostic X-ray radiology treatment in the LaRue Carter Hospital as well, and residents and staff performed neurological procedures there. Also, some residents rotated through the radiotherapy section. On their rotations in radiotherapy, residents worked with Dr. David Gastineau. With his instruction, they learned to do external radiation using the huge million-volt General Electric generator, which was nearly three stories high and was



Maurice Manalan, M.D.

walled off with concrete and lead to prevent any radiation escaping the treatment room.

Dr. Maurice Manalan, a former resident, succeeded Dr. Levin at Veterans Hospital.

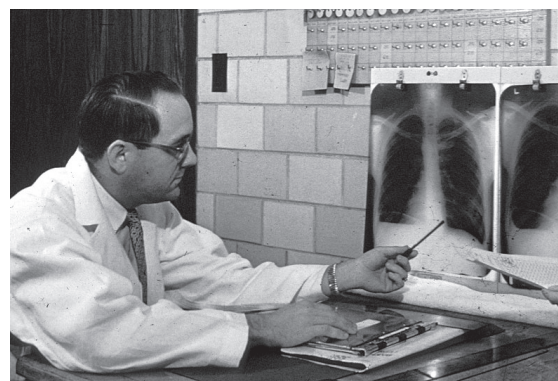
Later, there were

three physicians overseeing the radiology done at the V.A., Dr. Paul Harding, Dr. David Wheeler, and Dr. Clifford Taylor. Dr. Taylor had been on the faculty in the 1940s. He came back from St. Vincent; the other two were resident graduates at I.U. Then, in 1956, Dr. William Loehr was named chief of radiology at the Veterans Hospital, a post he held for 10 years. Dr. Campbell went to the V. A. daily to help with resident teaching.

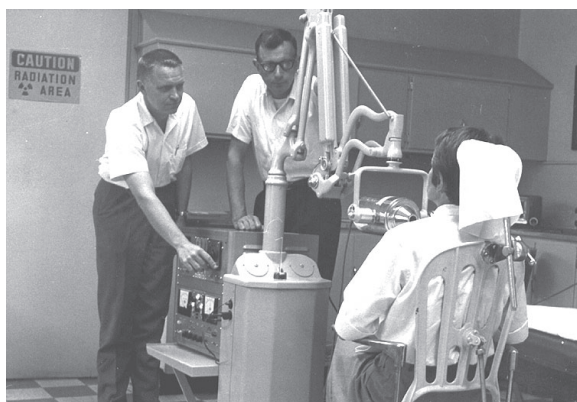
Dr. Loehr had come to the university from private practice in Dr. Beeler's office. After suffering a heart ailment in Boston, where he had directed radiology in an army hospital, he had returned to Indianapolis, and Dr. Campbell had given him an appointment in the department. At the V.A., he was very helpful in staffing cases. He was also much appreciated for providing

At that time, we called it isotopes. Of course, isotopes is what you use in nuclear medicine. That was the term that was used. We used to do isotopes. So we included that in our three-year program. Used to have one month, I think, of isotopes, and later on when I took the boards, that was an elective. You could take isotopes, get certified in isotopes if you wanted to or decline. I got certified in isotopes as well as radiotherapy and diagnostic radiology. My certification . . . was in radiology, and nowadays people are not certified in radiology. They're certified in diagnostic radiology, radiotherapy or whatever, so many subspecialties. We old generalists, so to speak - I could do anything, according to my certificate, not that I am qualified to do it. I don't know what else to say about those two years. We used to rotate through the different sections, whether you were doing chest work or GI work or whatever. The only subspecialty would be radiotherapy or isotopes.

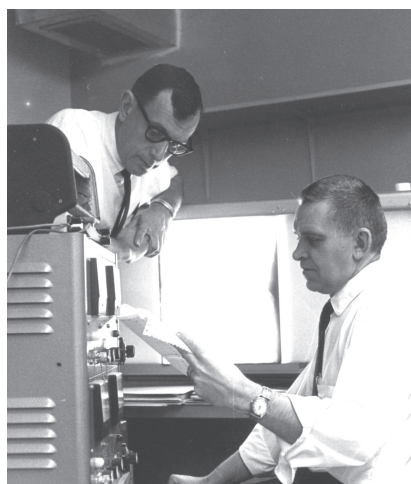
-Charles Helmen, M.D. 1956-1959



William Loehr, M.D., early 1950s. Photo from Charles Helman, M.D.'s collection.



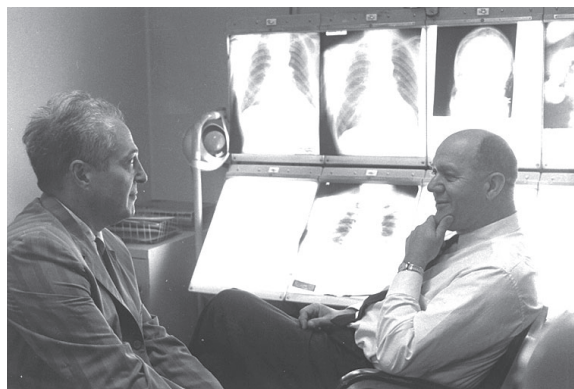
Deward Peterson, M.D., (left), General's assistant radiologist, and Emil Newman, a radioisotope technician, administer a radioactive iodine "tracer" and perform a study on a patient in X-ray's Radioactive Isotope Laboratory. Established in 1960, the laboratory was licensed by the Atomic Energy Commission. Photo from General Hospital's *Life In General* July 1964 issue.



Newman (left) and Peterson (right) confer on the renal test findings of a patient in the radioisotope laboratory. The radioisotope unit performed around 420 tests in 1965. Photo from General Hospital's *Life In General* January 1966 issue.

donuts on Fridays. The V.A.'s radiology section seemed less pressured than the other radiology areas at I.U. The V.A. approach was to get the job done and move on to the next case.

By 1960, a plan had been negotiated for departmental sharing of private practice income at I.U. and a revised contractual arrangement for staffing the V.A., LaRue Carter Psychiatric Hospital, and Central State radiology services. This plan enhanced the budget of the department, providing for the addition of six full-time staff members. It also provided for the upgrading of radiological equipment and of departmental subspecialty functions. Then came the long-delayed opportunity to integrate the radiological residency and staffing programs of the V.A. and General Hospitals with that of the university. With these three divisions integrated, all of the residents were selected and appointed by Indiana University. Contributions to their salaries and fringe benefits were funded equally by the three institutions. Early in the 1960s the requirement for board examinations changed from three to four years of formal training.



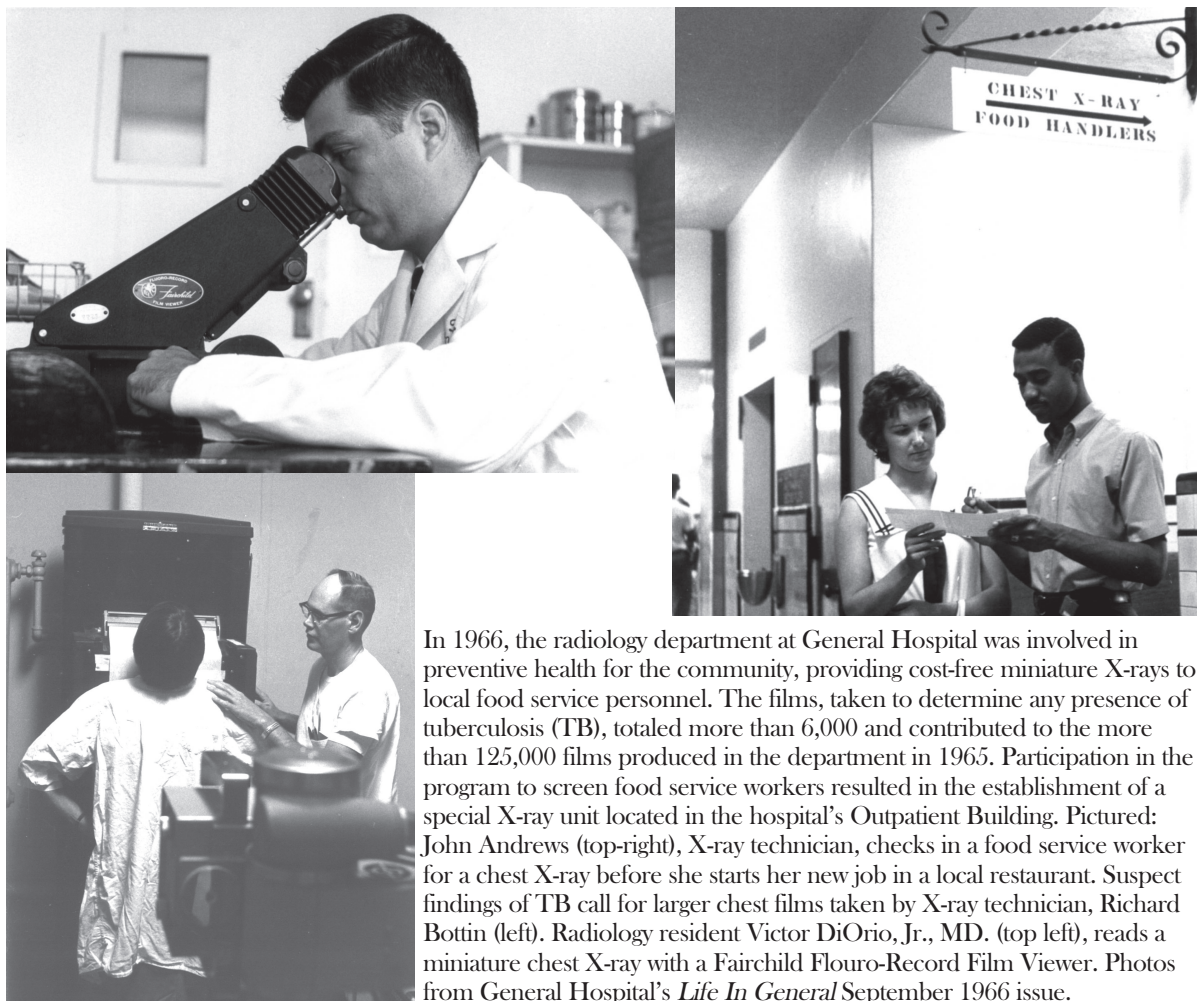
During all of his period as chairman, Dr. Campbell strongly advocated that General Hospital become part of the I.U. Medical Center, but this idea was

Visiting staff physician, Leo Kammen, M.D. (left), confers with William Tosick, M.D. (right), director of General's Radiology Department. At the time two reading rooms were maintained in the department. Photo from General Hospital's *Life In General* July 1964 issue.

continually rejected. The arrangement with the Veterans Administration worked out well. There was more contention, however, in the proposed annexation of the Marion County General Hospital radiology section where Dr. William Tosick was chief. Some private physicians, too, on the attending staff at the hospital, did not welcome the plan.

Many of the attending staff at General were private practitioners who were less than pleased by the prospect of being taken over by the university. For several years, Dr. John Robb and his partner, Dr. Lester Smith, went out to General Hospital as volunteers to teach the medical students and the residents and to oversee the clinical work. In 1956, a former resident, Dr. Deward Peterson, was appointed to the full-time faculty, assisting Dr. Tosick.

Because of his high regard for Dr. Tosick, Dr. Campbell permitted I.U. radiology residents to rotate through the General Hospital department. Dr. Tosick was a quiet man, but he was helpful and set a very good example for radiology residents. He could read through a stack of films very rapidly and extremely accurately. He was



In 1966, the radiology department at General Hospital was involved in preventive health for the community, providing cost-free miniature X-rays to local food service personnel. The films, taken to determine any presence of tuberculosis (TB), totaled more than 6,000 and contributed to the more than 125,000 films produced in the department in 1965. Participation in the program to screen food service workers resulted in the establishment of a special X-ray unit located in the hospital's Outpatient Building. Pictured: John Andrews (top-right), X-ray technician, checks in a food service worker for a chest X-ray before she starts her new job in a local restaurant. Suspect findings of TB call for larger chest films taken by X-ray technician, Richard Bottin (left). Radiology resident Victor DiOrio, Jr., MD. (top left), reads a miniature chest X-ray with a Fairchild Fluoro-Record Film Viewer. Photos from General Hospital's *Life In General* September 1966 issue.

The Campbell Years

Ordinarily crowded corridors were nearly empty at the end of the day when General Hospital's X-ray department and clerical worker Violet Cole (right foreground) began preparing for night emergencies. In 1963 the X-ray department provided more than 100,000 films for nearly 70,000 radiological exams. Photo from General Hospital's *Life In General* July 1964 issue.

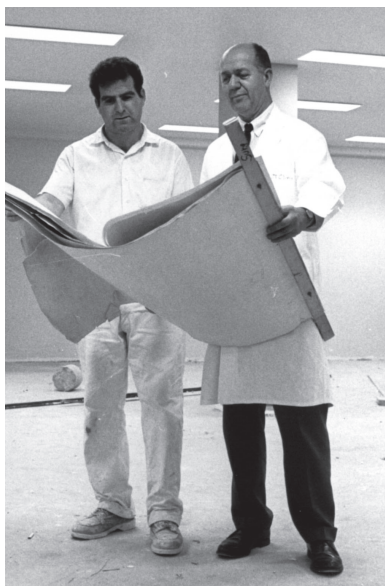


studious and often would take his lunch to the library and read. The young doctors working with him appreciated his skills as a teacher. The hospital administration, however, insisted that these residents go off the I.U. payroll and onto the General Hospital payroll while they were assigned there. The V. A. rotation, in contrast, was much less awkward because the V.A. contributed directly to the I.U. budget, and the remuneration of residents and staff involved was unchanged.

Residents considered the General Hospital experience one of their best rotations. At General, they encountered a wide range of patients and patient problems. Because of the volume of films to be read, they usually worked late. In addition to Dr. Tosick, they also had Dr. Peterson and Dr. Robb to consult with them. Residents at General also read films from the Flower Mission tuberculosis recovery hospital. There was not the volume nor the pressure in a V.A. rotation. As a result, it was a slower and quieter experience, and the residents had time to discuss their films with Dr. Wheeler and Dr. Harding. Also on that rotation, they learned more about nuclear medicine.

Dr. Campbell also covered work at the General Hospital department when that staff was away or depleted. From this direct experience, he learned a great deal. It became apparent to him that new radiological facilities were needed at both General and the V.A. Hospital. Also, the 10th Street hospital had requested funds from the Veterans Administration to completely remodel and upgrade the department there.

By 1969, Dr. Tosick and his colleague, Dr. Peterson, were wanting to leave General Hospital. They were not receiving much financial help there, and activity in the department was often chaotic. General was a very busy hospital with patients coming in at all hours. When Dr. Tosick resigned to enter private practice, radiology residents complained about the lack of instructional supervision. Dr. Campbell then informed General Hospital's medical director that I.U. would need to withdraw the residency rotation there.



The basement area of the new addition, being checked by Tony Cento (left), plasterer, and William Tosick, M.D., will offer storage space for films, offices, and a lounge. Photo from General Hospital's *Life In General* November 1967 issue.



Looking west from the administration building, the new addition to the hospital's X-ray department can be seen. The new area will provide increased space for both diagnostic and therapeutic work. Photo from General Hospital's *Life In General* February 1967 issue.



Furrowing strips are unloaded for General's new X-ray addition in an area formerly used as an administrative parking facility between General's administrative and surgery wings. Photo from General Hospital's *Life In General* August 1966 issue.



William Tosick, M.D., and Emil Newman monitor Picker MagnaScanner III, capable of producing "tracer" studies of virtually any organ, including the brain, enables radiologists to detect abnormalities in minimal time following the injection of radioactive materials. The machine, estimated to be 95% accurate, offers discomfort-free procedures. Photo from General Hospital's *Life In General* January 1967 issue.

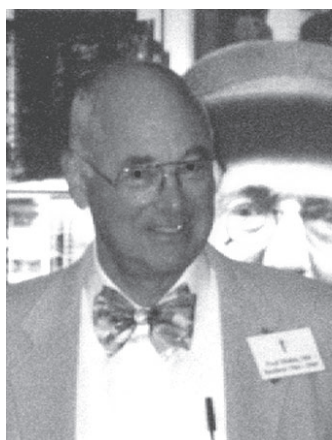
Although there was, initially, strong opposition to having General Hospital as a part of the I.U. operation, the hospital board decided in favor. Dr. Arvine Popplewell, the hospital's superintendent, then talked with Dr. Campbell. Dr. Campbell favored the idea of having I.U. doctors manage General's radiology department and named Dr. Charles Helmen as head of radiology at General Hospital, in 1970.



Charles H. Helman, Radiology Chief, General Hospital. Photograph #P Helmen, Charles H., University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

With the construction of the new Myers Building at General, Dr. Tosick had extended the X-ray section into an area of the new building, providing rooms for GU special procedures and nuclear facilities. Dr. Helmen went in as chief of radiology at General Hospital and with hard work built up the department. He reshaped the teaching program. Three residents went with Dr. Helmen to General, beginning a rotation there of three residents at one time. Dr. Helmen was a real stickler for film quality, for interpretation, and for clear language in reports. He wanted the work that came out of the department to look professional. He felt that if the radiologist's report looked careless, everyone would think his work was, too.

Several of the I.U. faculty made daily visits to the hospital. Dr. Campbell assisted Dr. Helmen with the clinical work. In addition, Drs. Edmund (Tony) Franken, Frederick Mishkin, Gerald Kurlander, John Robb, and C.A. Stayton, Jr., served as staff consultants in their specialty fields to help with General's radiological caseload, which was ever increasing. With this upgrade, the accreditation was reinstated. Dr. Miguel Dizon was named full-time chief of nuclear medicine at General in 1970. The contractual arrangements made by the university with these two campus hospitals were very important. Neither General Hospital nor the V.A. could meet the recently upgraded requirements of the residency review committee for residency training without an affiliation with a more diversified, fully-approved program such as the one at I.U.



Certain problems arose, however, in trying to maintain the separate identities of the V.A. and General Hospital, one being a federal property and the other operated by the county government. Consulting and teaching radiologists

Frederick Mishkin, MD, visiting the department during the 2002 Campbell-Klatte Lectures. Photo from department archives.

Radiology resident Donald Moore, M.D. gets a patient X-ray film record from Fletcher Andrews, file clerk, in General Hospital's X-ray Department, where in 1964 a record number of radiological films were produced for diagnostic procedures. The total: 110,598 for patients at General and its Flower Mission and Sunnyside units. Photo from General Hospital's *Life In General* July 1965 issue.



generally served both departments. Radiological conferences and didactic courses to a large degree were conducted jointly for mutual benefit.

At first, General Hospital and the V.A. Hospital were not part of the I.U. system as far as the training of technicians. Student technicians in the late 1960s were going to the Clinical Building and to the V.A. but not yet to General. These student technicians were processing film by hand to save money. A part of the residents' training then was to take call. When no staff physician or staff technologist was there after five p.m., residents and tech students did the work.

A technician who worked with Dr. Miller after graduation from the school, remembers it as a different world, one with different rules. "We knew where we stood, and we knew what we were expected to do." In later years, after the Registered Technician accreditation came in, there was always a staff member on call. Technicians in training carried with them small notebooks to record how they should perform their various tasks, such as how to position a patient and how to set technical factors on a machine.

A major accomplishment in 1958 had been the completion of the Medical Science Building, which finally permitted all four years of medical education to be taught on the Indianapolis campus. The first year of medical education was at last moved from Bloomington to Indianapolis. Now, with all four years of medical school education being taught at the Medical Center campus, the number of medical school admissions would rise. Significant increases would come, too, in the number of full-time faculty and in the number of residency and fellowship placements. There would also be larger classes in nursing and the specialty technologies.

When a new State Board of Health Building was constructed on Michigan Street near White River, the old Board of Health Building was donated to the Medical Center. Now called Fesler Hall, it housed the offices of the dean and assistant deans. Dr. Van Nuys as dean of the medical school provided radiology more teaching space by giving the department exclusive use of the small auditorium in that building.

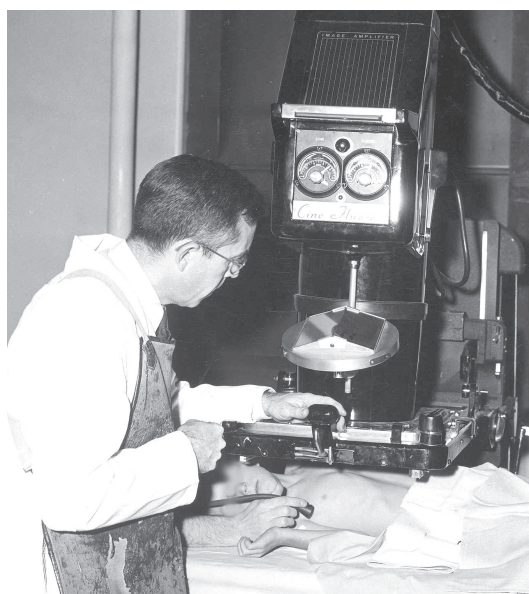


Fesler Hall, 1956. Originally built for the State Board of Health, the building was taken over by the School of Medicine in 1950. Fesler still looks like this in 2004. It now houses the offices of the Dean of Medicine. Photograph #C2.37.3-004, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

Dr. Miller was provided with a small research laboratory in Fesler Hall. His research at this time, funded by the National Academy of Science, was a study dealing with the development of more efficient equipment for diagnostic X-ray procedures using barium to locate tumors and ulcers in the digestive tract. Dr. Miller's study involved the synthesis of more efficacious barium contrast mixtures and ancillary techniques for its clinical application using special cameras for taking rapid sequence recordings of X-ray images on the fluoroscope screen.

With the opening of the new medical school building in 1958, the original medical school building on campus was renamed Hurty Hall. That became the site for research X-ray cine equipment in cardiology, which together with other similar units at Fesler and the pediatric research building, gained for I.U. a leadership role in cardiovascular radiology.

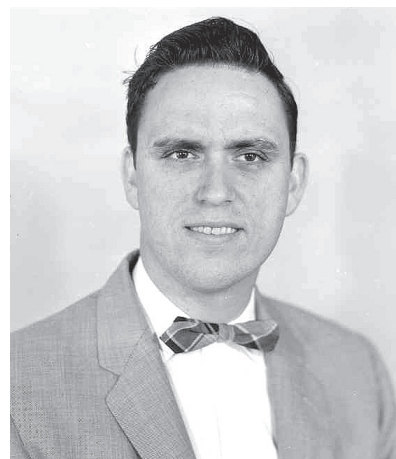
I.U. had one of the first X-ray movie units in the country, and the university was one of the pioneers in developing cineangiocardiology, or X-ray movies, in the diagnosis of heart disease. In 1956, through a grant from the Riley Memorial Association, new electronic equipment was installed at the Medical Center, an electronic image amplifier and motion picture camera which provided motion picture X-rays. Images from the motion picture camera were amplified on a fluoroscope viewer, making it possible to arrive at diagnoses more accurately and more



John Campbell works with a young patient being X-rayed with a Westinghouse Cine Fluorex fluoroscope X-ray machine in 1958. Photograph #UA24-000762, UA 24, IUPUI University Library Special Collections and Archives.

quickly. These amplified images provided a more comprehensive study than earlier methods.

The development of image intensification of the fluoroscope permitted the use or ability to take movies of a fluoroscopic image so that the image could be seen without the dark adaptation. Dr. Campbell and Dr. Mason Stones, a colleague at Cleveland Clinic, were two of the groundbreaking cardiologists and cineographers. Dr. Campbell and Dr. Paul Lurie, a pediatric cardiologist at Riley, had pioneered the use of cineradiography at the Medical Center for the diagnosis of congenital heart defects in children. Under his direction a study was conducted in the fall of 1960 with a grant from the research council of the National Academy of Sciences. Radiologists disagreed as to the diagnostic quality of X-ray movies on different sizes of film, questioning whether the 16, 25, or 70 millimeter film produced the best quality in photographing the heart and other body organs for diagnostic purposes. It was Dr. Campbell's plan to conduct a series of comparative studies with the size of the film the only variable.



Eugene Klatte, M.D. Photograph #P Klatte, Eugene C. 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

When Dr. Eugene Klatte came on the staff at I.U., he, too, became expert in this new field. He had approached Dr. Campbell about doing radiation therapy, but then Dr. Gastineau was covering that area. Instead, Dr. Campbell assigned Dr. Klatte to pediatric radiology because at that time there was a real need in the department to have someone in pediatrics.

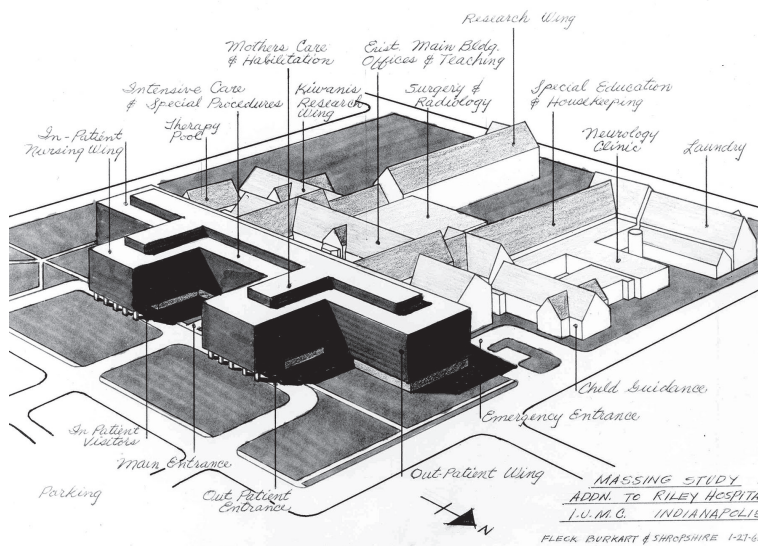
Dr. Klatte found that to be a very exciting time for pediatric radiology, and he became significantly involved, doing about half of his work in cardiovascular and half in other aspects of pediatric radiology. Along with an adult cardiologist and a pediatric cardiologist, he was working at that time on various types of angiograms. These doctors were in the forefront in the development of that kind of technique. In addition,



Practical nursing student, Rose Smith (left), and X-ray technician, Marge Parkhurst, position an infant patient for a special X-ray of the child's skull. Photo from General Hospital's *Life In General* July 1964 issue.

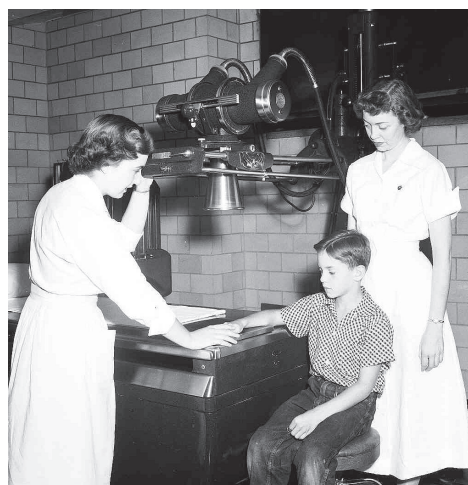
The Campbell Years

Drawing of Riley Hospital's addition dated January 27, 1965.
 Photograph #121-00146, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



the research wing of Riley was enlarged to include one of the first cineradiographic radiological units for use in pediatric cardiology.

The long-awaited radiology facility at Riley Hospital opened in 1965. Until then, the university radiology department could not always furnish adequate and safe diagnostic studies for infants and children. Before Riley had its own radiology department, the children patients were moved into Long Hospital for X-ray work, brought in on wooden carts through the underground tunnels linking the campus buildings. Moving these young patients, many of them critically ill, involved some risk. The aides ran them in and back, but the children usually had to wait for the film processing, which at that time depended on slow, manual processors.



X-ray technicians X-ray a young boy's arm in Long Hospital. Photograph #UA24-000733 N, UA 24, IUPUI University Library Special Collections and Archives.



Riley Hospital expansion construction, ca. 1960s. Photograph #C2.95.1-012, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



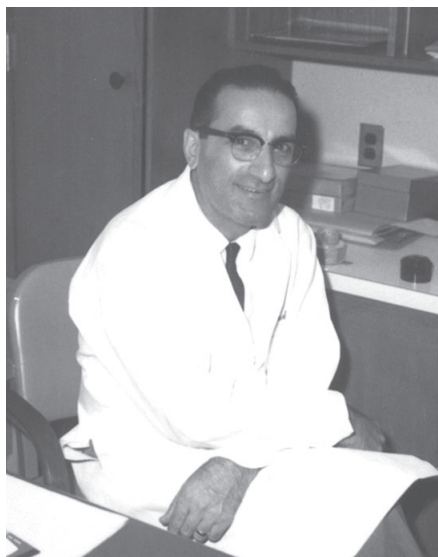
(left) Bi-plane fluoroscope unit, Riley Hospital. Photograph #UA24-000744, UA 24, IUPUI University Library Special Collections and Archives. (right) Bi-plane fluoroscope being used during an examination of the heart. Photograph #UA24-000745, UA 24, IUPUI University Library Special Collections and Archives.

However, taking them over to Long was the best that could be done for them.

With the advent of cardiac catheterization, or angiography, and the advancement of knowledge and specialized radiological procedures, pediatrics became a distinct subspecialty during the 1950s. Infants and children could be better cared for in special quarters, separated from adult patients. Separate cardiac catheterization and cineradiographic facilities were set up in the Riley cardiac suite, and bi-plane fluoroscopy was installed in the bronchoscopy area. Dr. Klatte supervised pediatric radiology during this introductory period and covered adult cardiovascular radiology as well. As section chief, he helped develop the new pediatric radiology division, putting in considerable time to design the department for Riley.

When he left I.U. in 1962 to head the radiology department at Vanderbilt University, the design was virtually completed. It was another three years, however, before the new department opened. The pediatric caseload, which averaged about 30 cases per day, almost tripled within the next few years. Because much of the work being done by Dr. Klatte and others in pediatrics was new, the cinecardiography for example, there was much to be recorded in academic publications. Dr. Klatte felt justifiably proud in sharing his achievements at Riley.

The new appointment as chief of pediatric radiology was Dr. Hooshang Taybi, who had been chief of radiology at the University of Oklahoma. Dr. Taybi, an Iranian, proved to be an accomplished teacher who kept an excellent file of articles. When he would see a particularly good case, he would go to his files and pull out a half dozen or so articles dealing with that issue. Later in his medical career he wrote extensively, including a major textbook on congenital malformations and syndromes. Much of the material which he started with, he gained from his Riley Hospital experience. Dr.



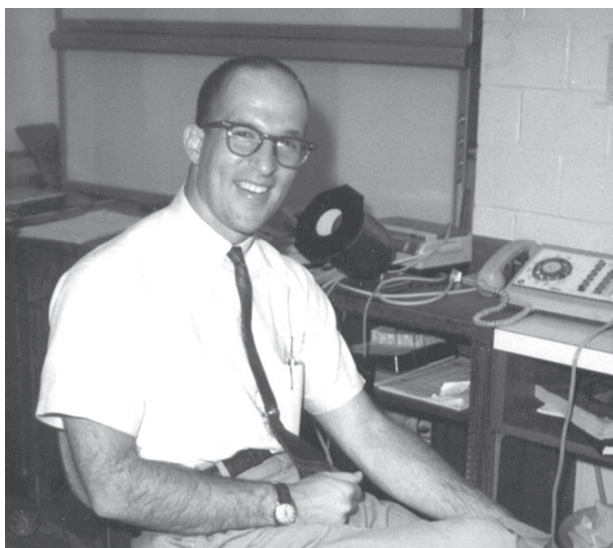
He [Taybi] was a tremendous teacher – he had a marvelous file of articles. He would get in at five in the morning and – five or even before, go to bed early – and he would read the literature. He clipped articles from magazines. Copying machines were not big at that time, possibly even nonexistent. He had a great collection of information, and when he'd see a good case, he'd run to his file and pull out a half dozen articles dealing with the issue. When I worked with him, for the year and a half that we were together, I developed a file, and it was a marvelous learning experience for me. I still can't sleep in the morning, getting used to being up when he was up.

- Gerald Kurlander, 1963-1967

Hooshang Taybi, M.D., 1964. From Dr. Jack Campbell's collection.

Gerald Kurlander, who had been in the I.U. residency program, was named to be Dr. Taybi's assistant. Dr. Kurlander was knowledgeable about the most current activity in radiology, especially pediatric radiology. He was a dedicated journal reader who would spend three or four hours on a Saturday afternoon in the medical school library.

As an I.U. medical student, Dr. Kurlander had, literally, carried cineangiocardiology equipment on his back, going along with Dr. Klatte and Dr. Campbell to meetings to help them give their refresher courses and show others in radiology the work they were doing. These were always well-attended meetings. After sorting out the issues of angiocardiology, Dr. Klatte and Dr. Campbell would then make their observations regarding the aorta in the chest, showing on chest films the many different things that could be learned by looking at the aorta. The reputation of the Medical Center internationally was advanced greatly by their perfecting to a very high level the plain film diagnosis of cardiovascular disease.



When Dr. Taybi left in 1964, the Riley Hospital radiology department was under construction. Dr. Kurlander, as his successor, saw it to its completion. He became director of Riley's pediatric radiology department but, actually, at that time he was the only pediatric radiologist at the university. The author of a classic article on plain film findings in

Gerald Kurlander, M.D., in reading room in 1964. Photo from Dr. Jack Campbell's collection.

Growing again. . . Riley Hospital expansion construction, Fall 1967. Photograph #121-00150, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



congenital heart disease in the pediatric population, Dr. Kurlander also was very active in the interpretation of angiocardigraphic cineradiology studies at Riley. The departmental space at Riley seemed too large at first, but in a matter of months it proved otherwise as the department there quickly developed. Help came from some very dedicated technicians and also dedicated cinegraphic personnel. Several people from the radiology department at Long Hospital also went over to help.

Dr. Campbell and Dr. Helmen staffed cases at Riley after Dr. Kurlander in 1967 left to go into private practice, but soon Dr. Edmund Franken came in as chief of pediatric radiology. He had chosen to interrupt a neuroradiology fellowship in St. Louis to come back to I.U. and take over at Riley. Earlier, he had been a resident in the department. A second large clinical addition to Riley Hospital was completed in 1969, resulting in an increased caseload there. At that time, there was a fairly busy pediatric radiology service. Dr. Franken was the sole pediatric radiologist. Most of the films at Riley were read by residents, but Dr. Franken would often check them.

Indiana University's medical school enrollments rose. The teaching of senior medical students had become more clinically based with six or eight instructors demonstrating to groups of 10 or 15 students different methods of X-ray diagnosis and therapeutics. With increased subspecialization of radiology, greater effort was made to include instruction presented by radiologists in the various subspecialties. In the '60s, class size at the school reached 250 students. The quarter system required that the faculty give repetitive teaching sessions to six groups of senior students four times a year. There were a number of excellent teachers.



Edmond (Tony) Franken, MD, visiting during the 2002 Campbell-Klatte Lectures. Photo from department archives.

In the 1969-70 academic year, medical students at the university were offered a substantially different curriculum. Basic science was scheduled for the first year and half of the second. An introduction to clinical medicine came in the second year and, in the third, core

clinical clerkships. The fourth year was a completely elective program with more than 300 approved courses in clinical and basic sciences. With the introduction of a new core curriculum, the diagnostic and therapeutic applications of radiology were correlated with the clinical sciences in the combined teaching sessions of sophomore and junior students. During those years, the department established weekly clinical review, conferences in pediatrics, medicine, surgery, cardio-pulmonary, and oncology, attended by the radiological and clinical staffs and their student clerks.

Dr. Campbell in reviewing cases with residents demonstrated his scholarship in radiology by pointing out fine details and real subtleties. Residents responded to excellent teachers. Dr. Gerald Kurlander has been cited as one who truly enjoyed the residents and the intellectual challenge and stimulus of teaching them. They found his enthusiasm infectious. In the postgraduate education program under Dr. Campbell, three teaching methods had become a traditional part of the resident training. These were the Friday evening seminar begun in 1950; the daily noon T-conference, which he had developed in 1955 as a means of building skill in diagnosis; and the I.U. postgraduate course in radiology, which began in 1957.

The Friday night meeting in Fesler Hall continued to be the chief teaching technique in the department. Participation by the entire departmental staff, residents, former residents, and practicing radiologists within a 100-mile radius gave the Friday night meetings a true educational impact. These meetings also provided much congeniality. Slide lectures were presented by the residents, and they were responsible for getting the slides made. In addition, Dr. Campbell would assign them an article to review and then send them to various journals to give a review report on it. Following the break for dinner, the usual program was a formal teaching presentation by one of the faculty or a guest.

On one occasion, during one of the residents' conferences, a particular case was unreadable. The films were being projected on an overhead projector. Dr. Campbell was telling jokes and turning the film clockwise and counterclockwise as if he was not paying any attention at all. All of a sudden, he announced, "Well, it's appendicitis." Actually, he was doing two things at once and perhaps more. He had that ability. He was amusing his audience while he was flipping the film

From the collection of the late Andre Galiber, MD.

SPECIAL DATE NOTICE

The regular Friday evening I.U. Radiology Seminar will be held on THURSDAY evening this week (March 15).

The program is as follows:

4:00 G.U. Pyelogram Conference
5:00 Journal Club
6:00 Dinner

7:00 Dr. Andre Galiber: WILMS' TUMOR: EVALUATION OF PULMONARY METASTASES

8:00 Film Interpretation Conference

Room 211B Fesler Hall

Over the years, many who have trained in the residency programs have gone on to be innovators and leaders in radiology throughout the world.

The late André Anthony Galiber, Sr., M.D., (1928-2000) is one of those residents who worked tirelessly to promote radiological services. Born in Saint Thomas, Galiber earned his doctorate at Howard University in 1957. He spent his internship and early residency at Freedman's Hospital in Washington, D.C. and in 1963 he became the first black person to complete a residency at Indiana University.



André Galiber, M.D.

During his residency in Indiana, Dr. Galiber served as a captain in the U.S. Medical Corps and was the Chief Radiologist at Fort Benjamin Harrison Army Hospital in Indianapolis, Indiana working with the supervision of Roscoe Miller, M.D.

Dr. Galiber was the first to perform and interpret echocardiograms on St. Croix. After completing his residency and only through self-study, conference attendance and CME presentations, he acquired excellent skills in cardiology, ultrasonography, computed tomography, and mammography. He was the first V.I. radiologist licensed in computer tomography and was an FDA accredited mammoradiologist, performing mammography since he opened his practice in 1964.

Dr. Galiber was the Director of the Charles Harwood Hospital Radiology Department in the 1960's and '70's, and then directed the Radiology Department at the St. Croix Hospital until his 1984 retirement. After that, he was a volunteer radiology consultant at the Governor Juan F. Luis Hospital (formerly the St. Croix Hospital).

In 1967, when he opened his first private radiology office, he became the first full-time, board-certified Virgin Islands radiologist and later was and is the only Fellow of the ACR from the Virgin Islands. Through his career, he was an active member of the Virgin Islands Medical Society for nearly 40 years, serving as President, Executive Secretary, Treasurer, and Delegate to the American Medical Association, as well as Delegate to the National Medical Association.

In the aftermath of Hurricane Hugo, Galiber salvaged his radiological equipment, established electrical power and a safe habitat for essential medical operations and in just nine days after the hurricane passed, he started providing full services to his patients. He became a charter member of the St. Croix Power Squadron.

On June 9, 2000, the Radiology and Cardiovascular Laboratory Department at the Governor Juan F. Luis Hospital was dedicated to Dr. Galiber. And, on the plaque memorializing that occasion, Mrs. Francis M. Molloy, Chair of the Hospital Board, wrote that the "unit is dedicated to recognize his significant contributions to diagnostic imaging."



In recognition of his work in the Virgin Islands, the Honorable Donna M. Christian-Christensen, Delegate from the Virgin Islands to the United States House of Representatives, memorialized the late Dr. Galiber in the United States Congressional Record on December 15, 2000, page E2212.

Resident André Galiber, M.D. (top left) is shown in this group photo with Bill Loehr, M.D. (bottom center).



From the collection of the late André Galiber, MD.

around. Then, having gained their full attention, suddenly he called out the answer. While residents appreciated the dramatics of his teaching, they also found him to be a caring physician. One former resident recalls witnessing his compassionate side. Just before a Saturday afternoon conference with surgery, Dr. Campbell chanced to meet a woman in the hallway, terribly distressed because the doctor with whom she had an appointment had left. Dr. Campbell went into the conference, still irate that the doctor would fail to remember his patient.

The postgraduate radiology teaching course drew large numbers of physicians, not only from Indiana but from many other places. In April of 1963 at the sixth such course under Dr. Campbell's direction, nearly 200 radiologists and urologists from 33 states, the District of Columbia, and Canada attended the four-day meeting held in Rice Auditorium at the Indiana State Board of Health Building. The course topic was "Radiology of the Urinary Tract." Nine specialists, headed by Dr. Nils Lindvall of Stockholm, served as faculty for the course.

The first departmental lecture, the Raymond C. Beeler lectureship in radiology, had been established at the I.U. Medical School in February 1957, two years after Dr. Beeler's retirement. The first Beeler lecturer was Dr. George D. Davis, a 1938 I.U. graduate of the medical school, then on the Mayo Clinic staff.

As the department moved into the 1960s, knowledge about diagnostic radiology was growing at an incredible rate. With a stronger economy, the federal government awarded large amounts of grant money for medical developments. Dr. Campbell recognized the importance of all of this. In building a department virtually from scratch with only two full-time radiologists, he had focused on setting up a physical plant,

From the collection of the late Andre Galiber, MD.

I. U. M. C. Department of Radiology RESIDENT NIGHT CALL SCHEDULE January 1, 1963 to July 1, 1963			
JANUARY		APRIL	
5 to 12	Grief-Galiber	6 to 13	Dehner-Hornback
12 to 19	VanBuskirk-Kyle	13 to 20	Cookson-Colbert
19 to 26	Cookson-Wohlfeld	20 to 27	Grief-Hammer
26 to Feb. 2	Hammer-Arvin	27 to May 4	VanBuskirk-Galiber
FEBRUARY		MAY	
2 to 9	Hornback-Baker	4 to 11	Cronin-VanBuskirk
9 to 16	Hittner-Miller	11 to 18	Hammer-Kyle
16 to 23	Baker-Dehner	18 to 25	Hornback-Wohlfeld
23 to March 2	Arvin-Cronin	26 to 30	Hittner-Cookson
MARCH		May 30th	VanBuskirk-Colbert
2 to 9	Colbert-Grief	31 - June 4	Miller-Hittner
9 to 16	Kyle-Hornback	JUNE	
16 to 23	Wohlfeld-Cookson	4 to 8	Dehner-Grief
23 to 30	Galiber-Hammer	8 to 12	Cronin-Miller
30 to April 6	Miller-VanBuskirk	12 to 16	Grief-Cronin
		16 to 20	Cookson-Arvin
		20 to 24	Hammer-Baker
		24 to 28	Hornback-Kyle
		28 to July 1	VanBuskirk-Galiber

providing basic technical facilities, and developing a competent staff. His strong interest was participatory teaching. With this concern for teaching, he had worked diligently to develop a good medical education program. His role at I.U., as he saw it, was to establish the Medical Center as a reputable source of radiological education.

In his own medical education prior to coming to I.U., he had not fully appreciated the importance and the necessity of promoting both basic and clinical research at academic institutions. Dr. Campbell found research grants were practically unavailable in clinical radiology, his particular area of expertise. He was unable, therefore, to attract the type of research funding which competitive institutions enjoyed and which would have enriched the I.U. department. This attention to research would be developed in the coming years.

Probably the most important research contribution for Dr. Campbell during his I.U. career had been the successful development of angiocardiographic cineradiology as a clinical tool, a contribution he shared with Dr. Klatte. This research had been facilitated by large National Institutes of Health grants awarded to the surgical and pediatric departments to promote the advancement of the diagnosis and surgical treatment of congenital heart disease. Other important research contributions during the Campbell years were made by Dr. Fred Mishkin in nuclear medicine and ultrasound and by Dr. Roscoe Miller in gastrointestinal diagnosis.

Attempting to keep abreast of the ever-changing technical advances and methodology in their particular field of medicine, members of the faculty sought out enabling courses and short sabbaticals as ways to gain new knowledge that would benefit the radiology program at I.U. Dr. Mishkin spent a year at Johns Hopkins in nuclear medicine and then, on his return, became head of that division.

Dr. Miller in 1965-66 took a sabbatical at Malmo, Sweden, studying advanced gastrointestinal techniques and brought back techniques he had learned for doing barium and air-contrast colon examinations. Dr. Rodney Million spent a year in Texas at the M. D. Anderson Hospital and returned to upgrade I.U.'s radiotherapy. Others upgraded particular programs: Dr. Eugene Klatte, the cardiovascular program; Dr. Hooshang Taybi, pediatric radiology; Dr. Charles Helmen, chest radiography; and Dr. James Lorman, the orthopedic teaching. Dr. Campbell received numerous requests from other radiology facilities for sabbatical visits, even from foreign countries.

While Dr. Miller was on sabbatical, Dr. Campbell kept him informed on matters at the university: "We're struggling along as best we can with a staff of three," he wrote in October, "and argue daily who will leave next on sabbatical when you return! . . .

Our big problem at present is that we are so covered up with service and teaching classes we have no time for research and development.”

In another letter, he shared some of his frustrations. “We plan to move to Riley at the middle of February. I’m still having a real problem with the V.A. and have about decided to move my office over there and let Bill Loehr help with some of the work at the center. . . . Also, the residents are getting unhappy with the service at General Hospital, and I may have to pull the residency out of there gradually. I’m considering reducing them to two men now, and then one man after July 1, and make a complete withdrawal as of July 1966. We are working hard on the plans for the new therapy and radioisotope areas.”



Roscoe Miller, M.D. Photograph
#P Miller, Roscoe Earl 002,
University Photograph Collection
Portrait File, IUPUI Library
Special Collections and Archives.

Dr. Campbell consulted Dr. Miller about a prospective visiting professor from Odense, Denmark. An appointment in diagnosis had not yet been filled, and this man, with eight years experience in neuroradiology in Sweden had been recommended. Dr. Campbell corresponded with Dr. Miller about Dr. Henning Bech. Dr. Miller, in turn, offered to line up another good man for neuro for the year following Dr. Bech’s stay if Dr. Campbell agreed. The Swedish radiologist, Dr. Folke Brahme, came to I.U. in the 1967-68 academic year. Later, he was invited to return to I.U. as neuroradiology faculty. At I.U. Dr. Brahme along with Dr. Campbell interpreted neuroradiological studies. He became very popular with the radiology faculty and long after he left, he was remembered for his demonstrations of the Seldinger intravascular catheter techniques.

What later became known as interventional radiology was initially called special procedures. At I.U. the interventional section grew from one small corner room and rather primitive methods of imaging and intervening a patient’s body to very sophisticated equipment and physicians and technologists who were able to do much more than was normally done in the surgery department.

Surgeons at first saw arteriography as an intrusion by radiologists into their area of medicine. This thinking in time changed. The physicians and technologists were doing much more with angiograms than was normally done in the surgery department. Then from the angiograms, which radiologists were now performing, came cardiography where, literally, they were inserting lines into people’s hearts and injecting contrast media and examining their coronary arteries.

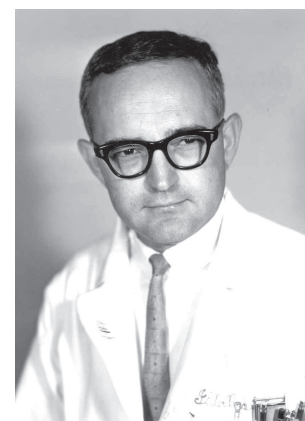
During the Campbell years, the 1950s and 1960s, radiology consisted basically of diagnostic film taking, fluoroscopy, and radiation therapy. One unit of radiation therapy was kept in the Clinical Building next to the diagnostic department. In 1957, Dr. Gastineau was succeeded by Dr. Jesshill Love. Funds raised by the Cancer Control Program of the Lions Clubs of Indiana continued to help provide needed equipment for the treatment of cancer patients. In teaching cancer therapy, Dr. Love had used the Lions Clubs' 1961 donation of a 5 curie cobalt therapy unit to the radiotherapy section, a replacement for the department's 250 kv machine. While he was at I.U., Dr. Love taught therapy and performed some unique radium implants, something which the department had not been accustomed to doing.



"During my early years at IU, there was only Diagnosis and Radiation Therapy and I did both. This photo [from 1956 was originally used as a teaching slide in lectures for students,] depicts the patient in the knee-chest position for the placement of radium in the uterus [for] the treatment of cancer of the cervix. At the time, this position was used to throw the position of the uterus anterior away from the rectum, and prevent radiation damage to the rectum," explains Dr. John Campbell. Photo from Radiology Department Archives.

While he was still a resident, Dr. Rodney Million worked with Dr. Love to oversee that section. On his return to I.U. from Houston in 1963, he became acting director of radiotherapy services. Dr. Million went on to become an internationally-known radiotherapist in Florida and wrote the leading textbook for head and neck cancer therapy with radiation. Dr. Campbell, unsuccessful in recruiting a radiation therapist, for a year or more assumed supervision of this area, and Dr. Frederick Mishkin and Dr. Jay Shoop spent much of their time in the mid-1960s with radiotherapy patients. Dr. Ned Hornback, an I.U. resident, continued in a two-year fellowship in therapeutic radiology. As a resident, training with Dr. Million and Dr. Campbell, he had become interested in radiotherapy.

Dr. Felix Pircher was named chief of nuclear medicine in 1960. Nuclear medicine in that decade became the most rapidly expanding field in radiology with the growth of useful immunoassay and organ scanning procedures. Dr. Campbell had supervised the nuclear laboratory at I.U. up to this time. Then, its work consisted chiefly of thyroid uptakes and scans, hemotologic studies, pancreatic function tests, and therapeutic applications of I131, P32, AU198, and cobalt 60.



Ned Hornback, M.D., future Chief of Radiation Therapy for the Department of Radiology, 1965. Photograph #P Hornback, Ned B. 001, University Photograph Collection Portrait File, IUPUI Library Special Collections and Archives.

A nuclear physicist, Dr. Isaac Reese, joined the full-time radiology staff in 1961. He and the department's full-time radiation physicist, Dr. Alice McCrea, provided a more comprehensive academic aspect of radiophysics and radiobiology to the departmental programs in diagnosis, nuclear medicine, and radiotherapy. Also Dr. Reese had responsibility for teaching residents, medical students, and tech students. Both Dr. James Durlacher and Dr. McCrea, physicists in the department, were excellent teachers who helped prepare radiology residents to pass the physics examinations.

In 1962, Dr. Pircher and Dr. McCrea moved to Duke University, and for the next several years, Dr. Reese directed the nuclear medicine section. In 1964 he gained the active assistance of Dr. Mishkin and Dr. Shoop, who would later become important names in nuclear medicine. Then, after a year's study in nuclear medicine at Johns Hopkins, Dr. Mishkin became the new department's full-time chief of nuclear medicine, supervising at that time nuclear services at Marion County General Hospital and the V.A. Hospital as well as the university.

During the next few years, Dr. Mishkin greatly enhanced the scope of nuclear medicine and trained several physicians and technologists who have since become well known in the field. Also he introduced a formidable capability in rectilinear and gamma camera scintiscanning at all three nuclear medicine sections as a result of research he had done. Dr. Vernon Lieninger in 1967 was assigned to the radiotherapy section as assistant radiation physicist.

While Dr. Mishkin was in charge of the nuclear medicine section, a new body scanner, one of only three of its kind in the country, was acquired through the generosity of the Indiana Lions Clubs. This scanner, operating through the use of radioisotopes, more than doubled the speed of the radioscopy laboratory's diagnostic work. Disease processes could be detected more accurately and simply, without the discomfort of older, more cumbersome diagnostic methods.

The compound used, which had a very low level of radiation,



(top) Felix J. Pircher, M.D. , Assistant Professor of Radiology, in 1962. Photograph #P Pircher, Felix J. 002, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives. (right) Photograph #P Pircher, Felix J. 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

Clinical Building, ca. 1964. The photograph appeared in the *IUMC Quarterly Bulletin*, vol. 26, no. 3, Summer 1964, p. 64 and in the the 75th anniversary booklet *I.U. Physician*, September 1978, p. 17. Photograph #C2.18.3-004, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



was originally a by-product of the Oak Ridge, Tennessee, atomic laboratories. According to Dr. Campbell in a university press release at the time, the acquiring of this scanner reflected the rapid growth of nuclear medicine, one of the few practical, everyday uses of atomic energy to benefit society. At that time, there were two rectilinear scanners made from parts of old B29 airplanes. The residents supervised all of the examinations.

In the mid-'60s, Dr. Campbell moved his office to the V.A. temporarily, where he reorganized that division's functions and enlarged its facilities to provide neuroradiology and angiography. It literally was a change in the whole philosophy of how that department was run. Suetta Kehrein, a clinical instructor in the technician training program, went with Dr. Campbell to help him set up the V.A. department and oversee the student technicians and stayed there for two years. She and Dr. Campbell completely reorganized the filing and labeling systems for patients. From his second office at the V.A., he would return to Fesler Hall at noon to participate in the daily T-conference and, following that, spend an hour or more at the Clinical Building before returning to the V.A.

At the Veterans Administration Hospital, Dr. Loehr continued as radiology chief, but working only part time. Dr. Campbell then assigned full-time faculty members and some of the attending staff to the V.A, to help cover the diagnostic work and the teaching functions. He also extended student technician assignments to the V.A. as the

"Bill Loehr (William M. Loehr) was the Chief of Radiology at the 10th Street VA Hospital for many years. One afternoon he called the residents to come down and stand by the side of the hospital so that he could have this photo taken. He then gave us each autographed copies. Mine has been in my living room bookcase for a number of years. Those in the photo are (l-r) Frederick Mishkin, M.D., a first year resident; Robert (Harry) Hittner, M.D., a third year resident; William Loehr, M.D.; and John Dehner, a second year resident. Note all of the bowties!" This photo, taken in 1963, is from the private collection of Frederick Mishkin, M.D.



need for radiology services there was growing. Dr. Mishkin developed the nuclear capability at the V.A. Hospital at that time. With a great amount of part-time help from Dr. Loehr, Dr. Miller, Dr. Helmen, and Dr. Kurlander, the chairman staffed the work of the four-person resident teams rotating through the V.A. system.

Dr. Edward Cockerill became chief of radiology at the V.A. in 1969, coming back to the university from a private practice at Michigan City. A graduate of the I.U. School of Medicine, he had begun his residency in 1964 with Dr. Franken and Dr. Everett Smith. By 1969 the V.A. caseload had reached about 40,000 patients per year. Four years earlier, it had been determined that all radiation therapy patients at the V.A. and General Hospitals would be treated at the new I.U. radiation therapy center on a contractual basis with the radiology department. Before that, a radiotherapist had done the therapy work on V.A. equipment.

When Dr. Edward Cockerill went to the V.A., Dr. Loehr was working half days. He retired shortly afterward. For several years, he had been at the Veterans Hospital on a half-day rotation, leaving at noon to care for

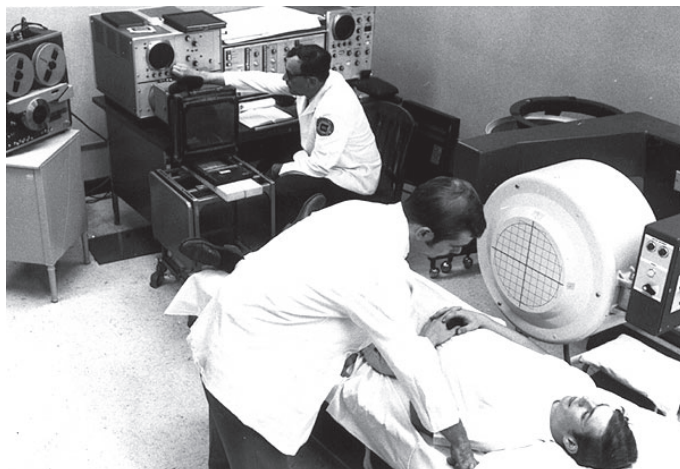
Emil Newman (rear) and Ron Hull (center) of General Hospital's radioisotope laboratory, prepare a patient for testing on the nuclear medicine department's new gamma camera. The new camera provides X-rays on 8x10 film and stores the images on magnetic tape for play-back through a multi-channel analyzer. The images are produced following intravenous injection of radioactive materials to map both function and anatomic structure of the organs under study. Photo from General Hospital's *Life In General* June 1970 issue.

My close friend and roommate entered the I. U. Department of Radiology residency after his internship and while I was in the service, my original plans had been to go into family practice. While in the service, I realized that family practice was not going to be as satisfying as I thought it would be and called Dr. Campbell from my duty station in Europe and interviewed to begin my residency in 1964, joining my close friend Dick Van Buskirk in the residency and becoming a resident with Dr. Tony Franken and Everett Smith in 1964. From the very beginning, radiology was exciting. It was demanding, but it was extraordinarily exciting. The faculty during my residency were just very wonderful people.

Edward Cockerill, MD



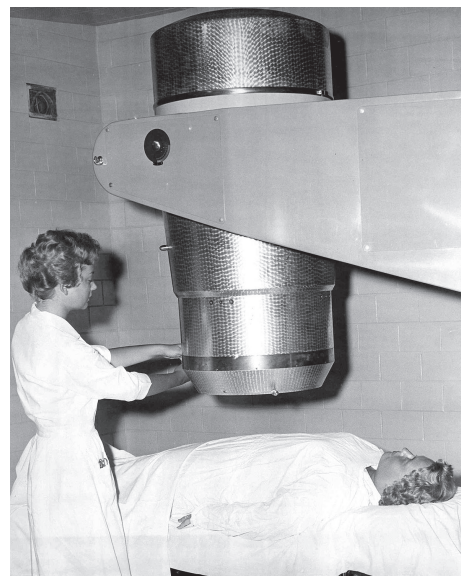
Gerald Kurlander, M.D. Photograph #P Kurlander, Dr. (?), University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.



A technologist examines a patient. IUPUI University Library Special Collections and Archives.

his wife who was ill. He was a generous, well-liked colleague. A deeply religious person, he led a Bible study at the V.A. during the noon hour. The department would for the most part close down then, and some of the technicians, another doctor, and a therapist would hold the Bible study with Dr. Loehr for about 45 minutes twice a week.

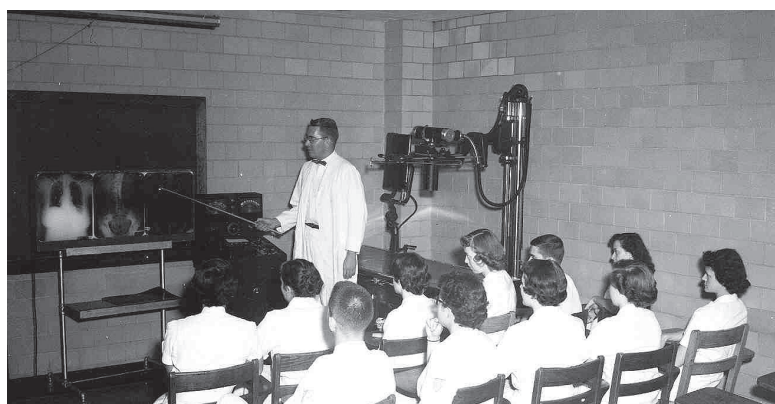
The V.A. Hospital was a unique place to work. Catheters there were still handmade by the residents and one of the technicians. The reports were handwritten by the residents. Dr. Cockerill was always available and would review the GIs and angiograms, myelograms, and other studies with the residents as well as most of the routine readings.



Essentially, the diagnostic X-ray staff near the end of the 1960s included Dr. Campbell and Dr. Miller, Dr. Mishkin in nuclear medicine, Dr. Franken in pediatrics, Dr. Edward Cockerill at the V.A., and Dr. Helmen at Marion County General. Most of the teaching was on-the-job training by senior residents, who had a great deal of responsibility. Dr. Campbell and Dr. Miller were often away lecturing. Residents rotated through the different sections doing chest work or GI work or whatever else that was needed. The radiology residency then was three years, one in radiation therapy, and two in diagnostic with three months of nuclear medicine required.

In the day-to-day operation of the department, Dr. Campbell counted, too, on his support staff. Sibyl Van Voorhees served as his secretary and office manager. Becky Sharp was a popular chief technician in the early Campbell years. Another well-regarded chief technician was Ray Shalkowski.

In the late 1950s, Dr. Campbell had begun to experience some problems with the radiology technician program. The



Technologists in class. Photograph #UA24-000734 N, UA 24, IUPUI University Library Special Collections and Archives.



Joan Messenger, X-ray technician, May 1957. Photograph #P Messenger, Joan 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

school was not going as well as he thought it should. It was then that he asked Dr. Charles Helmen to direct the program. This was in accordance with rules requiring a radiologist as the head of the school. With this appointment, the school was much improved. Dr. Helmen spent a significant amount of time with it, teaching a course in principles of radiology to the tech students three times a week. He was of great help there. Almost all of the staff physicians supported the technician program over the years. Radiology

technology students had rooms on the sixth floor of the Clinical Building, moving at a later time to the first floor.

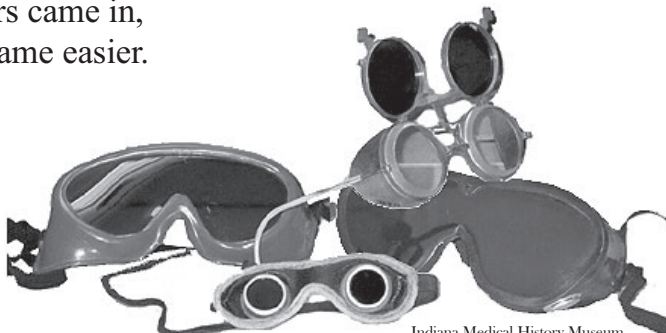
Until the late 1950s, technicians had depended on hand processing of the films. All of the images went through the developer and the fixer. Film reading then really was a wet reading. The wet film on a hanger was held up before a view box, which usually had three bulbs, although not all of them might have been functional. Technicians had to put the film on a rack and put it on a hanger, dip it, look at it closely, figure it out, hoping they had used the right technique.

Taking films was a messy task. When the technicians used the wet development, the fixer would usually spill onto their white uniforms leaving brown spots and a strong odor. In those days, they were required to wear white uniforms, hose, and shoes. Women technicians wore dresses, not slacks. When automatic processors came in, that part of the technician's work became easier.

In 1959, the Medical Center had installed a new photo processing unit, which filled about a fourth of the room at Long Hospital. One end of it extended into the



X-ray technician, Sandra Hiatt (left) retrieves a film from Kenneth Cooley, who has just removed it from radiology's automatic processor with a production time of six minutes. Photo from General Hospital's *Life In General* July 1964 issue.



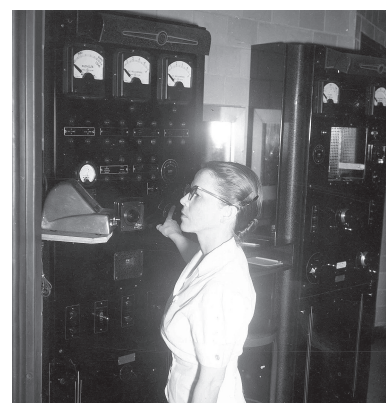
Indiana Medical History Museum

darkroom. The film was put into the processor, and 20 minutes later it came out. This processor made X-ray films available for study 20-30 minutes after they were taken. Development and drying of the films under the old method had taken nearly 50 minutes. In the early '60s rather than turn on the processors at night, to save money technicians processed films by hand. When image amplification became available, when the radiology department gained an image intensifier, the red glasses worn in the darkroom were no longer needed.



Photograph #UA24-000738, UA 24, IUPUI University Library Special Collections and Archives.

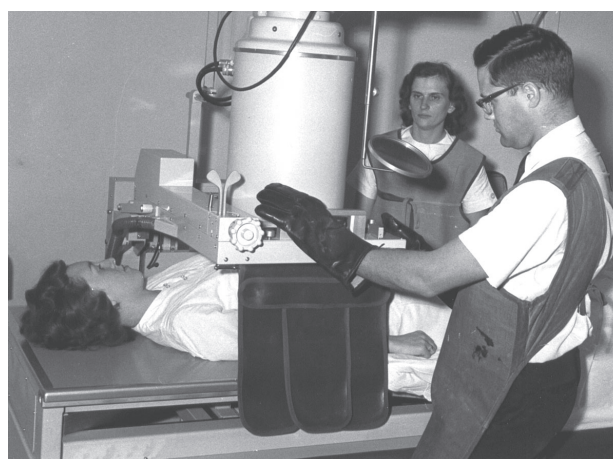
Going from mirrors to television in image-amplified fluoroscopic examinations was an important milestone. It permitted fluoroscopic viewing of the patient with a lower level of radiation exposure and a much brighter image. The fluoroscopy images were first viewed on mirrors about five to six inches in diameter. With the advent of television, the image field size was larger, allowing a larger area of the body to be visualized. The combination of image amplification and TV produced images bright enough to eliminate the need for darkened rooms and for preliminary eye accommodation by wearing the red goggles.



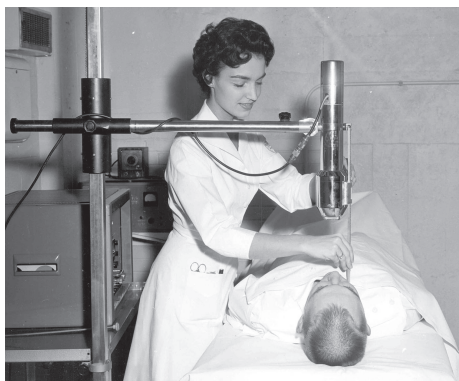
Photograph #UA24-000737, UA 24, IUPUI University Library Special Collections and Archives.

Radiology was still in the Long Clinical Building when the department installed the first televisions. Because there was a lack of good equipment then, working in that area was physically hard. Space was limited to a reading room and an X-ray room and hallways. Everyone was very close; the first floor was very crowded. In addition to the technology school students, there were residents, medical students, and staff personnel as well.

In 1968, Dr. Campbell proposed the idea of training special procedures technologists in gastrointestinal work when students rotated to the radiology



Radiology resident, John Strycher, M.D., and technician Margaret Schaeffer use General Hospital's new fluoroscopy unit in a completely lighted room without the aid of red glasses. The improved procedure has been made possible by an image amplifier which both amplifies the picture of a body organ and heightens light on it and then transfers it as a reflected image on a viewing mirror. Photo from General Hospital's *Life In General* October 1964 issue.



Technologist performing a special procedure. IUPUI University Library Special Collections and Archives.

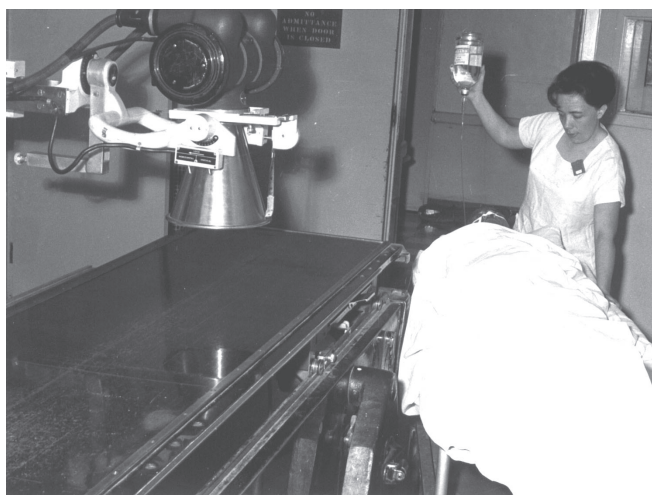
section at the Veterans Hospital. Three of the men were trained using a teaching program developed by Dr. Roscoe Miller. Suetta Kehrein was promoted in 1967 from being a clinical instructor to having charge of the whole school program. Although two others helped her in the clinic, basically the responsibility for the growing program was hers.

Every staff person or resident or technologist was acquainted with everyone else because they worked together all of the time. Part of the crew

was on the second shift or third shift, and everyone was in rotation. Staff people were generally courteous and interested in their fellow workers even when they were acquaintances rather than good friends. It was important that all of the staff – physicians, technologists, office workers, and maintenance workers – get along well and get the work done. When the department was very small, this idea was taken as a given. Dr. Campbell was always ready to do what he could to help anyone. To him, every person working in the radiology department was important.

There was always a good relationship, too, among members of the three resident classes. Developing a department camaraderie became even more important as the department began to grow in the late 1950s and 1960s. Departmental parties did a great deal to encourage this. Residents and their families were entertained by several of the senior faculty members and their wives. Dr. Cockerill and Dr. Robb and their wives hosted summer picnics and parties at their homes. In Dr. Campbell's backyard, the guests played tennis. At Dr. Miller's farm near Zionsville, they played horseshoes and volleyball and sampled Mrs. Miller's speciality, coffee ice cream.

Before the campus expansion, everyone was centered in one place. As the radiology departments in the different hospitals developed and as subspecialization began to separate people into sections, it was not as easy to know all the other radiology people, even though they were in the same medical school



To relieve departmental orderlies busy at other tasks, X-ray technician Martha Stephenson wheels in a patient scheduled for diagnostic filming on a department planigram. The apparatus permits X-ray studies of any bodily depth. Photo from General Hospital's *Life In General* July 1964 issue.

department. Sometimes the loyalty seemed focused more on where they worked or on their area of radiology rather than on the shared concern about X-ray imaging or treatment of patients.

Two extensive enlargements of department space came about near the close of Dr. Campbell's chairmanship, the new University Hospital and the new Radiation Therapy Building on Barnhill Drive, near Emerson Hall. With the addition of these two new buildings at the Medical Center, the main diagnostic radiology department would leave Long Hospital, and a separate unit would be set up for radiation therapy. Dr. Rodney Million, who had headed the radiotherapy division and had urged the separation of radiation therapy from radiology, left I.U. to become head of radiotherapy at the University of Florida.

In 1970, Dr. Glenn Irwin, dean of the medical school, announced the creation of a new Department of Radiation Therapy with Dr. Ned Hornback as its chairman. Plans called for an expanded radiation therapy center at the university, built by the state and equipped with funds raised by the Lions Clubs Cancer Control Program. Until the therapy building was finished, the new Department of Radiation Therapy continued to share quarters with the radiology department. Dr. Campbell saw this break off of the radiation therapy section as another step in



Groundbreaking for the Radiation Therapy Building in 1970. People on the shovels are (l-r) IU president Joseph Sutton, unknown, IUPUI chancellor Maynard Hine, and School of Medicine dean Glenn Irwin. Photograph #UA24-000748, UA 24, IUPUI University Library Special Collections and Archives.



Leininger, Vernon E. Leininger, M.D., with a model of the new Radiotherapy unit built underground in front of Emerson Hall in 1970 by the Hoosier Lions Clubs. Photograph #P Leininger, Vernon E. 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.



Representatives of the Lions Club Cancer Control Fund tour the completed radiology facilities with Steven Beering (4th from left) and Jim Rice (far right). Photograph #UA24-000749, UA 24, IUPUI Library Special Collections and Archives.



University Hospital construction July 21, 1966. Photograph #C2.109.1-029, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.

positioning the I. U. School of Medicine competitively in this field of medicine.

Dr. Campbell became very much involved near the close of the 1960s in the plans for building a new adult University Hospital. At last, radiology could move out of the crowded quarters in Long Hospital. Dr. Miller was instrumental in designing the GI section of the Department of Radiology, and Dr. Campbell had designed the remainder of the diagnostic sections as well as the entire Radiation Therapy Building. Another concern at the time was the need to upgrade the radiological facilities at two other hospitals, the V.A. and Marion County General.

Phase One of the new University Hospital opened in 1970. Like Long and Coleman Hospitals in the early part of the century, a modern, well-equipped University Hospital would greatly impact the medical education and clinical studies directed by the I.U. medical faculty. In this new state-of-the-art facility the Department of Radiology gained 40,000 square feet of additional radiological space. When radiology moved to University Hospital, the radiation therapy and nuclear medicine laboratories gained additional space in Long Hospital. University Hospital's



The new University Hospital in the 1970s. Photograph #C2.109.3-015, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives.



John Campbell, M.D. (dark jacket) enjoys the early days in the new University Hospital reading room. Photo from Dr. Jack Campbell's collection.

department later expanded with the addition of an outpatient facility.

Building a faculty was always a concern. Without sufficient funding, the chairman of the department had a real problem in acquiring and keeping talented faculty, something he very much needed to do if he wanted to develop an academic radiology department with full capabilities. About 20 percent of the services in the university section were to private patients. Dr. Campbell, after years of solicitation, finally succeeded in getting the university to establish a clinical fees fund. Twenty-five percent of the fees from private patients went into this fund, along with any contractual fees paid for services to the Indiana and federal departments of health, the Indiana University student health service, and the V.A. Cold Springs Road tuberculosis hospital.

These additional funds were paid, share and share alike, to the full-time faculty, regardless of whether such faculty members had actually participated in these services. Even with this supplementary funding, Dr. Campbell was able to afford only nine full-time faculty by the time he left in 1971. Part of this shortfall, of course, was due to the inability to attract sizeable research grant money.

In earlier days, the university had paid the radiologists a salary at whatever the assistant or associate professor or instructor was due. Also, they received a portion of the private fees collected in the department. After 1956 when Medicare came in, all the radiologists expected to be paid for their services. This was a major change in attitude. Early on, money was never really an issue. All the teachers had to come to terms with what they were earning, and they were comfortable. Then when salaries grew, major salary differences occurred and that caused many excellent radiologists who couldn't accept the difference to leave academics eventually.

Another strain on Dr. Campbell's budget was the need for the more sophisticated and costly equipment items, such as automatic processors, image amplifiers, cineradiographic units, radioisotope generators, cobalt therapy units, and remote-

General Hospital's new fluoroscopy machine, the first of its kind in Indiana, is equipped with a television system to monitor the image made during the exam, operated by remote control, and capable of producing sharper diagnostic radiographs in less time than conventional equipment. Dan Shea, chief X-ray technician, and Ellen Steen, technician, are shown preparing a patient for a diagnostic procedure. One of the two monitoring screens, which will step up teaching programs, is visible at left. Photo from General Hospital's *Life In General* February 1971 issue.



controlled fluoroscopy. Ultrasound really became more popular in the late '60s and early '70s. Initially, it was very expensive machinery, but it became a part of radiology because of its many uses. Lung, heart, gall bladder, and liver problems could be detected with ultrasound, and it was used, too, in obstetrics. The very expensive CT and MRI scanning units were yet to come.

Dr. John Campbell resigned his chairmanship, effective July 1, 1971. Sincerely concerned about inequities in health care for the least advantaged members of society, he accepted an opportunity to move to Los Angeles, California, to become chairman of radiology at the Martin Luther King, Jr., General Hospital at Watts. In his work there, he would be training resident physicians and persons from Watts to go out into the community as medical corpsmen to locate patients in need of health care.

Retirement offered Dr. Campbell this new opportunity, and he welcomed it. His comment in an interview with a local newspaper columnist was typical of him: "The polarization of the population today is a terribly serious matter.

Campbell Leaves Post, Klatte Named Successor

John A. Campbell, M.D., is a physician who talks and acts like a sociologist.

He has resigned his post as professor and chairman of the Department of Radiology at the School of Medicine here effective July 1 to go to the Watts district of Los Angeles, Calif., to pioneer in research into new systems for the delivery of health care.

Dr. Campbell can point to a record of more years of service to the I.U. School of Medicine than any other department head. After receiving B.S., B.M., and M.D. degrees from the University of Cincinnati and taking postgraduate training at Detroit Receiving Hospital and Henry Ford Hospital in Detroit, he came to Indianapolis in 1945 as director of the Indiana University Hospital radiological services. He has been here since, becoming chairman of the Department of Radiology in 1956.

Dr. Campbell has piloted the small department that he joined to the ranks of the largest and best among medical schools in the country. The department now offers a postgraduate education program for 30 resident physicians in radiology and a technology training course for 120 student technicians in addition to the radiology curriculum for medical students.

Dr. Campbell also has periodically offered two-week postgraduate courses that have attracted physicians from throughout the country.

In his new position, Dr. Campbell will serve as Chairman of Radiology at the Drew Post-graduate Medical School and Chief of the Radiology Service, Los Angeles County-Martin Luther King, Jr., General Hospital.

The Martin Luther King General Hospital is a totally new institution built in the Watts district, a community of 450,000 people that until now has had no hospital facilities. The Drew School is the academic arm of the hospital.

There will be no undergraduate medical students, but the school will concentrate on training resident physicians and those entering the allied health sciences such as X-ray technicians and laboratory technicians. These trainees will be drawn from the Watts community.

One of Dr. Campbell's former students will succeed him as head of the department here.

He is Dr. Eugene C. Klatte, currently chairman of the Department of Radiology at Vanderbilt University.

"I am extremely pleased that Dr. Klatte has agreed to assume responsibility for this growing department." Dr. Campbell said. "He was one of our better students, and has an outstanding record at Vanderbilt. He taught here for five years, so he understands our system."

The IUPUI Reporter, vol. 14 no. 6, May, 1971. Joe Lehman editor.

In making this move, I feel that I am doing the most relevant thing I can do.” In 1971, Dr. Frederick Mishkin and Dr. Isaac Reese voluntarily elected to join him in this endeavor.

At Indianapolis, Dr. John Campbell had achieved considerable success in developing a strong radiology department. By 1970, the Indiana University School of Medicine had become one of the nation’s leading medical schools, and the I.U. Medical Center, with its school and affiliated hospitals, had become a leader in medical research and hospital care.

The
Klatte
Years

1971-1991



Eugene Klatte came back to Indiana from Vanderbilt University, and on July 1, 1971, assumed the chairmanship of the I.U. Medical Center's Department of Radiology. Having Dr. Klatte return to I.U. was a great asset for the department and the university. He was well known as one of the outstanding radiologists in the country and had developed an excellent department at Vanderbilt. During his earlier I.U. experience, Dr. Klatte had been involved in vascular studies and had become greatly interested in pediatric cardiac radiology. Assigned by Dr. Campbell to Riley Hospital, he had helped design the new radiology department there.



Eugene C. Klatte, M.D., on the roof of University Place Hotel with University Hospital in the background. Photograph #UA24-000688, UA 24, IUPUI University Library Special Collections and Archives.

Increased space in the new University Hospital was assigned to the radiology department even before Dr. Klatte's return. In providing for these larger quarters, the Medical Center administration was demonstrating its support for the department's growth. This trend toward change, which began as a necessity, expanded with Dr. Klatte's long-range plans to make I.U. a major academic radiology center. The dean of medicine and the hospital administration assured him of new and more efficient equipment for the department.

The timing of Dr. Klatte's return to Indiana accounts for many of the changes that came about in the Department of Radiology. While he certainly deserves credit for developing these changes, many were also steps in progress whose time had come. Jack Campbell's goal had been to build an I.U. radiology department equal to that in other universities. Dr. Klatte was enough of a visionary to see all sorts of possibilities ahead in the field of radiology and, on assuming the chairmanship, he set out to reshape the I.U. radiology program.

The department's potential, obviously, lay in a larger medical school and a larger university. Dr. Klatte recognized this and, capitalizing on his success at Vanderbilt, managed to convince the university to give the radiology department a bigger place in the school, one more financially rewarding than before. The result was a stronger department, and his vision, his emphasis, and his academic orientation were instrumental in achieving that. Looking back on his I.U. chairmanship, Dr. Klatte has said that perhaps one of his most important acts in department development was to drive a rather hard financial bargain with the university for resources to enhance the department. This allowed for changes which otherwise would have been difficult to bring about.

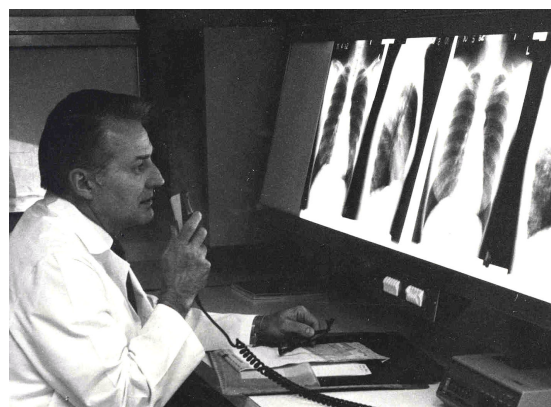
One need of primary importance was to increase the number of radiology faculty. It was necessary for financial compensation to be made competitive in order to attract good faculty. Dr. Klatte recognized this need and acted on it. The radiology staff at I.U. in 1971, while larger than when Dr. Campbell became chairman some 15 years earlier, was still relatively small, especially so with the radiology workload increasing at the four hospitals. At that time, there were fewer than 10 full-time staff members to cover University, Riley, General, and the V.A. Hospitals. Dr. Franken was chief at Riley and Dr. Helmen chief at General. Dr. Cockerill was at the V.A. Dr. Roscoe Miller had charge of GI radiology. By 1975, the number of full-time faculty had grown to 15.

When the university's Medical Center expansion began, Eugene Klatte was pleased to come back to I.U. as the Department of Radiology chairman. He brought with him from Vanderbilt a number of outstanding radiologists to be part of the faculty in Indianapolis. These men helped him enlarge the department at the time when University Hospital was opening and the radiology department was moving there from Long. Dr. Klatte felt that having this influx of people from Vanderbilt gave strength to the staff and gave him time to recruit others.



Heun Yune, M.D. and Dr. Kurt Amplatz presiding a Vascular Interventional Radiology scientific session at the 5th Asian Oceanian Congress of Radiology in Seoul, Korea September 1987. Photo from Heun Yune's collection.

Dr. Heun Yung Yune had trained at Vanderbilt and had returned there after a two-year stint in his native Korea. He was encouraged to “tag along” with Dr. Klatte. Dr. Vernon Vix did not arrive until 1974. The Vix family jokes that Mrs. Vix's heel marks are still visible all the way from Nashville to Indianapolis. But the family settled in, and it proved to be a good move for Dr. Vix, who right away was made director of diagnostic radiology, a position which at one time, before the department was divided into subspecialties, was a more



Vernon Vix, M.D. Photograph #UA24-000771, UA 24, IUPUI University Library Special Collections and Archives.

important role. Dr. Vix's particular interest was chest radiology. These two men proved to be very valuable additions to I.U. radiology, Dr. Vix for his steady support of the people and the programs and Dr. Yune for his high ethics and his dignity.

Dr. Robert Holden was another of the Vanderbilt doctors. As a medical student at I.U., he had known Dr. Klatte as a member of the faculty. Dr. Holden then did his residency at Vanderbilt. When he joined the I.U. faculty in 1973, he began doing both the general and neurovascular work at Marion County General Hospital. Dr. Tobin Mathews, Dr. Cameron Stokka, and Dr. Gary Becker were recruited for fellowships under Dr. Holden. Another Vanderbilt resident who also moved to Indiana was Dr. Justin Wass, still a member of the department today. Dr. Chi Ryu, who also had been a resident at Vanderbilt, came to join Dr. Klatte at I.U.



Justin Wass, M.D., 1990s

Although both Dr. Klatte and Dr. Campbell were recognized as extremely able and skilled in the field of radiology, well regarded for their achievements and as strong, directed individuals, they had very different management skills. One term that is frequently used to define Dr. Klatte is "father figure." Another is "benevolent dictator." He is recalled as "an extraordinary leader." All of these are positive terms.

One staff radiologist has commented: "Klatte was a dictator and that's a wonderful way to run a department. There's one guy with a vision, and if you like it and you stay with it, everything runs smooth. He doesn't really care what you think as long as you do your job and get things done." As another department member put it, "Gene pretty much did it [but] by making clear what he expected of everybody and managing most decisions himself." Perhaps in contrast with Jack Campbell's more laid-back style, Gene Klatte did appear autocratic. But his staff all through his 20-year era saw him as a man with vision, a person for whom they had enormous respect. "I respected him greatly," said another of his staff, "not only his scientific mind, his wisdom - and his personality was such that he would make one feel very comfortable, almost like a family member."

Dr. Klatte inspired immense loyalty. His staff felt great respect for him as a radiologist and a department chairman, but also as a teacher and a good friend. Because he was the type of leader who saw value in everyone's participation, he wanted to involve all his staff, to give each one an equal voice in department matters. On the other hand, he was charged with the responsibility for departmental decisions, and all of his decisions did not meet with universal approval. One staff member later recalled a vote which tallied something like 19 to one. That one vote was Gene

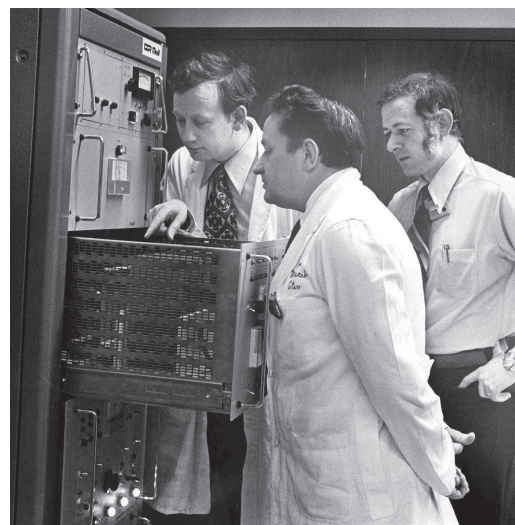
Klatte's, and his vote carried. A similar recollection of a vote when Jack Campbell was chairman had a similar result. The chairman, after all, was in charge.

The department would owe a great deal to Dr. Klatte's foresight. He seemed to be driven to doing the right thing and was willing to stand up for what he perceived and interpreted as the right thing. Although Dr. Klatte was recognized as a strong administrator, he was willing, according to Dr. Holden, to give departmental section chiefs and division chiefs of the different hospitals a fairly significant free rein to develop their own areas.

Dr. Klatte taught by example the value of leadership. One means he used for promoting departmental unity was an executive committee made up of the radiology chiefs of the four hospitals. The individual hospitals had their own management systems with heads of the different sections responsible to that hospital's chief of radiological services. The executive committee functioned in the same way, with these chiefs of the separate units also exercising leadership roles in the university department. This plan not only made the department more cohesive; it also created strong hospital loyalties which, in turn, strengthened the department as a whole.

Although the teaching program was of key importance, the initial need in the 1970s was to cover the clinical services. Because the department was so shorthanded, it was necessary to bring in additional personnel, both physicians and support staff. During this era, as changes came about rapidly in radiology, imaging equipment soon became dated and less efficient. The I.U. radiology department was also very much abreast of the new technologies which were then being developed. Once these new technological modalities were acquired, installed, and put into use, the number of clinical cases in the 1970s increased significantly. The further development of the new radiology space at University Hospital contributed to this surge of growth in clinical service. Since not all of the equipment was in place in the new facility when Dr. Klatte came, he then had the opportunity to select what he felt was of most benefit to the department.

Departmental growth in the 1970s was evident in ways other than increased faculty numbers and enlarged facilities on the medical campus. The growth of subspecialties led to



Three doctors examine radiology equipment, ca. 1970s.
Photograph #UA24-000750, UA 24, IUPUI University Library
Special Collections and Archives.

an increased involvement with procedures beyond diagnostic examinations. Nuclear medicine, the development of ultrasound, and CT scanning, for example, resulted in an explosion of the role of radiology in medicine. New modalities as they came along also widened the practice of radiology and multiplied rapidly the numbers of patients coming to the department. As radiology grew more specialized, there was a great need for a large staff of physicians and technicians skilled in these special areas. Dr. Klatte continued to add faculty who were specialized radiologists or who had taken specialized training.

A growing staff, more modern technology, expansion of hospital space for radiologists – all of these factors in the 1970s led to a greater proficiency in the department, which in turn brought a dramatically increased workload. The workload was heavy, and the work day was long. In the first half of the 1970s, a six-day work week was not uncommon. Change was coming, too, to the different areas on campus staffed by radiologists. The 1970s saw growth, too, in the separate radiology units on the Medical Center campus.



Charles Helmen, M.D., 2002

At the time Dr. Klatte returned, each of the four hospitals had only one or two full-time staff radiologists. But that soon changed. In 1973, when Dr. Holden came back to I.U. and wanted to do vascular and neuroradiology, he was asked by Dr. Klatte to work at Marion County General Hospital. Dr. Charles Helmen, then the chief of radiology at General, was leaving to go to St. Francis Hospital. From about 1975 until he himself became the I.U. Department of Radiology chairman in 1991, Dr. Holden directed the radiology work at the hospital. Dr. John Robb, who had been a part-time staff member for a number of years, went full-time in 1972. After closing his private practice, he went out to the university and was based at General Hospital. He was very helpful in orthopedic training and in clinical services.

Shortly after Dr. Klatte became chairman, he began to work to develop the radiology department at Marion County General. There were changes being made then, too, in the hospital's physical plant. General's poorly-equipped emergency room was always crowded with patients needing attention, but it wasn't an easy place to work.

In 1975, Marion County General Hospital was renamed Wishard Memorial Hospital. Dr. Donald Kreipke had known Wishard as a medical student and resident before he was appointed to the faculty in 1980. In his earlier Wishard experience, emergency X-ray work for him had been plain film and barium and occasional



Don Kripke, M.D., 1976

angiography, but when the CT was installed in the basement, that changed. Its location did present a problem for a busy staff, however. Until the department moved into its newer quarters, someone from radiology would have to leave and go over to the CT area to inject the patient with contrast.

When the Regenstrief Building at Wishard was completed in 1976, the radiology department there was divided, and the outpatient X-ray facilities were located in the new building. Then a few years later, when the Dunlap Building was constructed, a “bridge” between Regenstrief and Myers, a new inpatient radiology department was set up and the emergency room moved there. Nuclear medicine stayed behind in the old department quarters which were renovated. Later, that section moved to the basement of the Myers Building.

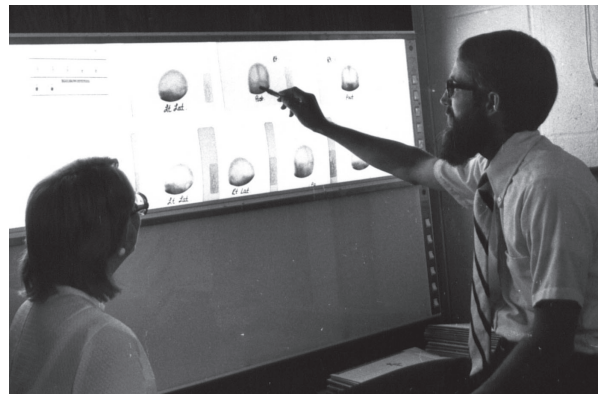
Dr. Holden as head of Wishard radiology developed a strong department. While he was in charge, he brought about a number of needed changes. He was also able to get it better equipped. During this time, the department was predominantly involved in special procedures and mammography and, with Dr. John Lappas’ influence, in GI radiology. Dr. Lappas, who studied with Dr. Roscoe Miller, headed the GI work at Wishard. He later would become head of the abdominal imaging services.



John Lappas, M.D., 1976

Both radiologists and residents enjoyed their time at Wishard. While their work was often pressured because the ancillary staff was smaller than at other hospitals, it was, for the most part, rewarding. Staff members were friendly and ready to fill in for others if needed. Even though some pieces of equipment might be outdated and unpredictable, there was a sense of satisfaction in the work there. The patients and their families and doctors were appreciative.

For residents, particularly those in the first year, Wishard Hospital provided opportunities for learning basic medical education. In Dr. Holden’s opinion, I.U. residents particularly

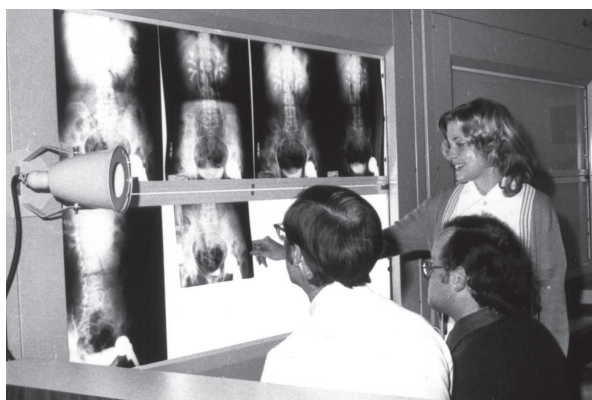


Radiology resident Robert Woolfitt, M.D., discusses brain scintimaging results with Bonnie Barker, nuclear medicine chief technologist. Photo from Wishard Hospital’s *Health Capsule* June 1975 issue.

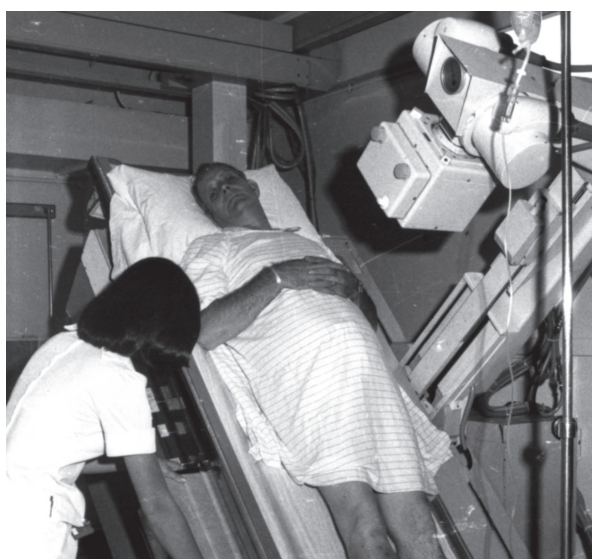
liked serving at Wishard because they felt they gained a valuable educational experience there. Dr. Robb was a great influence on the residents. He was very professional and concerned with the highest quality of patient care and the most insightful diagnostic abilities. On his Wishard rotation he insisted that the residents read books, and then he questioned them to see how much they had learned from their reading.

Riley Hospital had a small staff. When Dr. John A. Smith went to Riley in 1972, he and Dr. Edmund Franken, then chief of pediatric radiology, were the only radiologists. All the work, night and day, fell to them. Radiology had four rooms and office space beneath the surgery area in the new addition. Dr. Klatte's successors as head of radiology at Riley, Dr. Taybi and Dr. Kurlander, had left. Dr. Franken came on when Dr. Kurlander resigned. In the late 1970s, Dr. Aslam Siddiqui came to the Riley faculty to direct pediatric nuclear medicine and helped develop that unit into a very effective imaging facility for children. Dr. Wilbur Smith was at Riley from 1975 until 1980 when he joined Dr. Franken who had moved the year before to the University of Iowa Hospital at Iowa City, where he served as chairman of radiology.

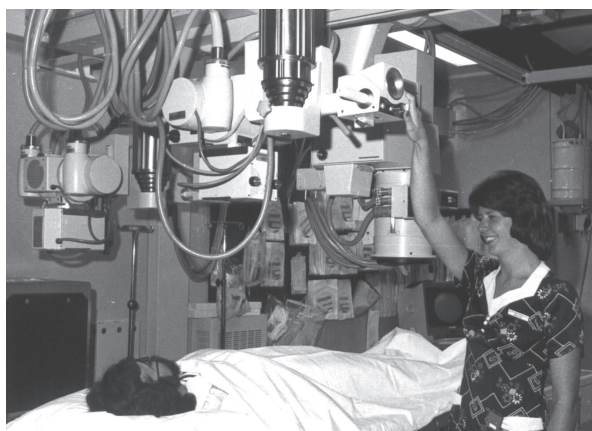
Cathy Whitehead, special supervisor and radiology technician at Wishard, prepares a patient for an arteriogram. In 1975 Wishard's radiology department completed 115, 652 procedures. There are 17 radiology technicians at Wishard with Randy Luckey as chief. Mark Helms serves as chief of the four technicians at Regenstrief Health Center. Photo from Wishard Hospital's *Health Capsule* October 1976 issue.

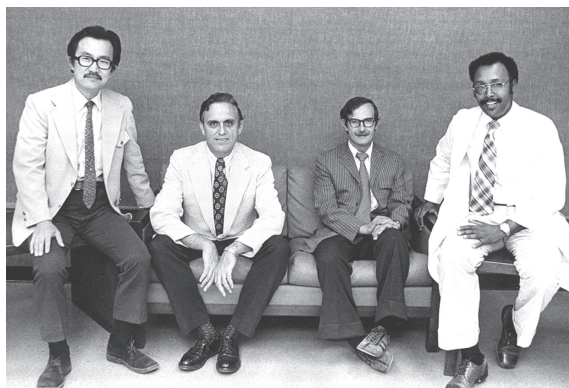


Radiology technician Theresa Bentz of Regenstrief Health Center puts up films for radiologist Justin Wass, M.D. (left) to interpret. Photo from Wishard Hospital's *Health Capsule* October 1976 issue.



Anita Custis, fluoroscopic supervisor and radiology technician, prepares a patient for a venogram at Wishard. Photo from Wishard Hospital's *Health Capsule* October 1976 issue.





(l-r) Heun Yune, M.D.; Eugene Klatte, M.D.; Edmund Franken, M.D.; and Jack Smith, M.D., c mid-1970s.

Dr. Mervyn Cohen, who would later become the I.U. department's chairman, arrived from England in 1979 for a year's fellowship. He had been interviewed at London's Heathrow airport by Dr. Franken who was en route home from a meeting in Belgium. In 1985, Dr. David Cory came on following a fellowship at Riley and, when he left, Dr. Steven Don in 1989 succeeded him. Dr. Cory went on to a private practice in South Bend, and Dr. Don moved to Children's Hospital at St. Louis. Another recruit was Dr. Susan White, who joined the faculty in 1987.

The original Riley Hospital for Children had been built on the I.U. campus in the 1920s. It was built to commemorate the name of James Whitcomb Riley, a favorite Hoosier poet. Later, in the 1960s, an extension, Phase 2, was added. Then, 20 years later, the hospital was again enlarged. A completely new radiology department was built. Phase 3 of Riley Hospital was completed in 1986. In this new building Riley's radiology department was significantly expanded; the new quarters provided three fluoroscopy rooms and four general radiology rooms.



Riley Hospital Phase II addition, 1972. Photograph #C2.95.3-048, University Photograph Collection Building Photographs File, IUPUI University Library Special Collections and Archives



Mervyn Cohen, M.B.,Ch.B., M.D.



(l-r) Robert Tarver, M.D. and David Cory, M.D. Photo from Mervyn Cohen's collection.



Edmund A. Franken, M.D. Photograph #P Franken, Edmund Anthony 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.



Boy undergoing a computed tomography (CT) exam.
Photograph #UA24-000770, UA 24, IUPUI
University Library Special Collections and Archives.

With the new space, an ultrasound suite was added as well as a CT scanner. Earlier, Riley radiologists had been doing ultrasound in a very small area, a converted children's play area with a curtain around it. This new

department was one of the first in the country to have digital fluoroscopy capabilities through a joint research project with General Electric. It was the first children's hospital in the United States to install computed plain film radiography, purchasing a unit from Philips.

Like Riley, the Veterans Administration Hospital for a long time relied on only one radiologist. Dr. Edward Cockerill, the only staff person in diagnostic radiology, had been in the department since the mid-1960s. After Dr. Campbell left, Dr. Cockerill became chief radiologist at the V.A. and guided that department through an extensive remodeling to modernize it. From a small group of rooms with only plain films, the department expanded and increased its staff. Dr. Klatte negotiated with the Veterans Administration to get the needed funding. Then Dr. Russell Wigh came on for a time, and Dr. Paul Caputi was there for a while. Dr. Wigh, an astute radiologist, did good work in evaluating metastatic disease of the GI track, particularly of the colon. In 1974, Dr. Klatte recruited Dr. Glenn Moak, who began his teaching career at the V.A.

Dr. Moak's initial mission at the V.A. was to help in the staffing of routine work, reviewing films and teaching residents in radiology. But it was his next assignment, being an instructor to the medical students, which presented Dr. Moak with a real challenge. Because he had no prior experience in teaching,



Wilbur Smith, M.D. (left) and Jack Smith, M.D. (right), Christmas 1978.



Wilbur Smith, M.D., 1978



Steven Don, M.D., 1986



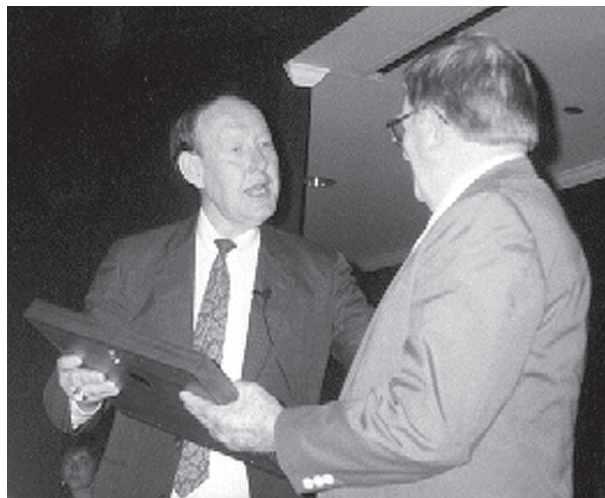
Glenn Moak, M.D. and senior students, November 1981. Photo from Margaret Olson, MD.

his first step was to determine not only what the course should include but how to present it meaningfully. He built a large teaching file of plain films, borrowing trauma films from General Hospital in addition to films taken at the V.A. He wanted his teaching to be practical, to be based on fundamentals. In these morning sessions, when he had students read the films together, he encouraged them to describe what they saw, to give opinions.

Testimony to Dr. Moak's success as a teacher are his numerous Golden Apple awards as the best teacher in the I.U. medical school. Medical students choosing radiology as an elective began rotations at the V.A. in the fall of 1974.

As soon as the clinical services became fairly actively staffed, then teaching became the next priority. Dr. Klatte, a lifelong student himself, was very much oriented toward academics. An I.U. resident of the early '70s remembers how impressed he was by Gene Klatte's ability to step in and give a lecture when the person to whom it was assigned was unable to give it. If he was given advance notice, Dr. Klatte could present the lecture, whether chest, GU, or neuro, and would always do well. Academics were important to him. He was an effective teacher, very much committed to high standards of education for medical students and residents.

Earlier, when the department was smaller, staff members could not give a great deal of time to the medical students. But they tried because they knew it was important that the students' time in radiology be worthwhile. When Dr. Vix came, he took charge of medical student education. He planned the sophomore course in radiology and scheduled the lectures for the students. Then Dr. Moak came to the V.A., with his detailed teaching plans and his obvious enjoyment in teaching medical students, this program soon became more structured. During the elective



Robert W. Holden, M.D., (l) hands Glenn Moak, M.D., an award during an annual Resident Graduation Banquet. Moak was the recipient of many awards for his teaching.

Radiology residents and staff enjoy a relaxing game of basketball, 1981-1982. From Dr. Margaret Olson's collection.

offered in radiology, half of the class studied with Dr. Moak while the other half rotated through the other hospitals.

Because radiology gained such popularity as an elective, it became in time a required course for senior medical students. I.U. was one of the first medical schools offering a formal radiology elective and, subsequently, one of the few requiring a month's clerkship during the fourth year. In addition, a formal radiology lecture series was started for sophomores. For the sophomores, who had already learned some anatomy and pathology, radiology was a valuable course. X-rays revealed anatomy and pathology and, with clinical materials added, served as an entry into clinical medicine from the pre-clinical years.

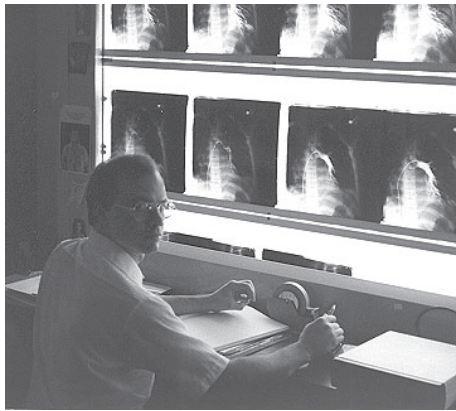


Dr. Klatte credited both Dr. Vix and Dr. Moak with the success of improving I.U.'s medical student teaching. He felt that developing the student program was very important and that all medical students on graduation should be well grounded in radiology. He had great success in encouraging the medical students to appreciate the field of radiology. As a result, many of them on graduation chose to become radiologists.

The I.U. Medical Center in the Klatte era was not a research-oriented facility, but rather a place that provided great opportunity for basic medical education. That focus was seen as very much in the best interest of the medical school. The radiology department shared that philosophy of a greater emphasis on teaching and a lesser one on research. The department during Dr. Klatte's chairmanship, however, did build research facilities in Long Hospital and also vascular studies animal laboratories. There were no key personnel then to develop a large research program. A moderate amount of both bench, or basic, research and clinical research was being done, but because of the heavy clinical patient load and the high priority given to



IU Medical Center animal labs. Photograph #UA24-000776, UA 24, IUPUI University Library Special Collections and Archives.

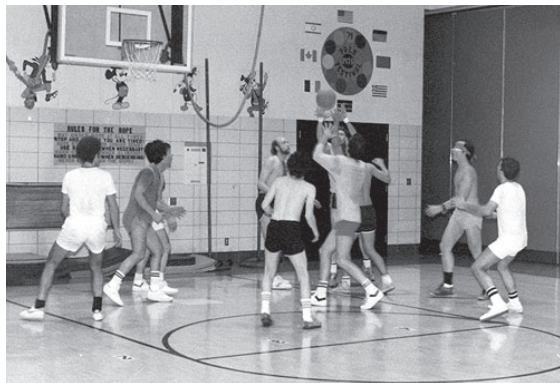


Resident Robert Tarver, M.D., with a pulmonary arteriogram in May 1982. Photo from Dr. Margaret Olson's collection.

teaching, research was not emphasized as it would be later. Most of the radiology faculty did contribute, formally and informally, to teaching medical students in radiology. As academic radiologists, they found a personal fulfillment in working with these students. As Dr. Vix has said, it gave a broader dimension to radiology than only reading films.

Unlike medical student teaching, the residency training was a one-on-one, 24-hour-a-day program. Even during the night when clinics were closed, emergency cases required someone to read films. Actual clinical cases were the basis for teaching residents. Today there is better staffing, but earlier residents had to take on more responsibility and more work. The residents did more work on their own. Later on, government rules would require that there be more staffing and, for the residents, less responsibility. Dr. Robert Tarver, who began his I.U. residency in 1980, recalls the comradeship existing among residents then. If one of the residents was still working at 4:30 or 5:00 o'clock in the evening, another seeing the need would step in to help.

Residents in the program during the 1970s were exceptional. Residents from the top 10% of their medical school class became rather standard under Dr. Klatte's leadership, and applicants below that ranking had difficulty being accepted at Indiana University. This was a period of outstanding residents. In the 1980s, it became harder to maintain this high level of excellence, but still many exceptional residents were recruited into the program during that decade.



In the early 1980s basketball was a favorite activity for residents on Wednesday nights. Photo from Dr. Owen Lee's collection.



Radiology residents soft ball team in 1983. Photo from Dr. Owen Lee's collection.

A significant number of the current radiology faculty came out of the school's residency program. Some of these were also I.U. School of Medicine graduates. Dr. Valerie Jackson, who would later become director of the residency program and department chairman, began her residency in 1978. At that time, those who had not done an internship before their residencies were required to stay on for a fourth year. That was known as the junior staff year, similar to the present-day fellowship yet without the formal instruction and with more responsibility and independence. In Dr. Jackson's words, "You were on your own." Dr. Donald Schauwecker, on completing medical school and residency training at I.U., was junior staff at the Veterans Hospital in 1980. Dr. Schauwecker, the first resident to go into nuclear medicine through radiology, qualified at the close of his fourth year for both radiology and nuclear medicine. At the end of his junior staff year, he was appointed to the faculty. He later became director of radiology at the V.A. Hospital.



Valerie Jackson, M.D., 1978



Donald Schauwecker, M.D., 1977

Under Dr. Klatte's administration, the I.U. residency program gained an excellent reputation. It had a strong record on residents passing the boards and finding good positions. Dr. Klatte's push for academic excellence and success caused some persons to feel a pressure of competition, of outperforming others. Still, this emphasis worked in the department's favor in that leadership both in style and initial orientation usually resulted in recruiting a much stronger resident. Perhaps with this competitive spirit some of the collegiality was lessened. On the other hand, because of it, some residents were encouraged to push themselves beyond their personal limits.

Another departmental teaching program which was developing well was the training of radiology technologists. Seven students had graduated in the first class in 1950, and the

(below) Resident Eldon Olson, M.D. (4th year) at the November 1982 RSNA meeting with his head CT exhibit. From Dr. Margaret Olson's collection.



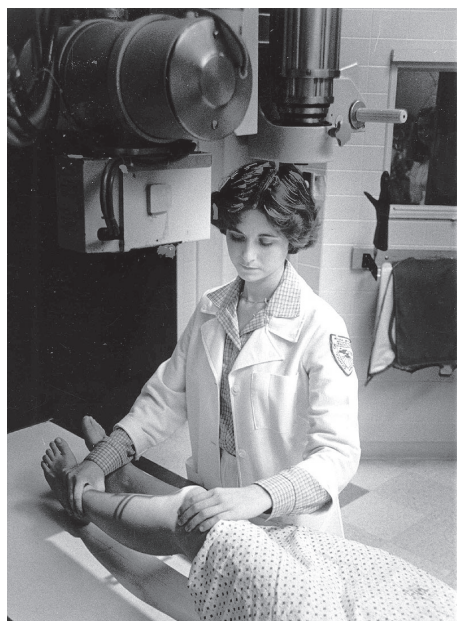
numbers had steadily risen since then. Dr. Charles Helmen as the school's director helped enlarge the program, working with Suetta Kehrein, a 1964 graduate, who in 1967 had taken charge of the technologists' training. In 1973 she became baccalaureate coordinator.

In earlier days, when the faculty was smaller, tech students provided needed manpower for the department. Like the residents, they worked long hours, often without supervision, taking call at Long and the V.A. Hospitals and rotating to Riley. As a result, they gained valuable clinical time. There would be a registered technologist and two students, a first year and a second year student on duty. If the registered tech was called to one of the other hospitals, the students would carry on. Frequently, tech school graduates stayed on at I.U. as department technologists, many of them spending most of their careers with I.U. radiology.



Emily Hernandez, Ph.D.,
director of radiology
technologist training programs,
1990.

“Technologist” became a more preferred term than “technician” as this educational program expanded and their more specialized skills made technologists even more valuable to the clinical practice of radiology. After 1979, only degree students were admitted to the program which, earlier, had included certificate students as well. Emily Hernandez became director of the school in 1975, succeeding Monte Chaille, and she still holds this position today. In 1979, the program was renamed Radiologic Sciences, a term reflecting not only the technological expansion in radiology but also the diversity being offered. At the end of Dr. Klatte's time as chairman, students had three degree options: bachelor of science degrees in medical imaging technology and in nuclear medicine technology and an associate of science degree in radiologic technology. By the end of Dr. Klatte's chairmanship, the school had graduated some 600 students, 278 of whom had earned certificates. The others were degree students.



An effort was made to try to rotate full-time staff radiologists through all of the hospitals on the Medical Center campus and the V.A. for night and weekend call coverage. Each doctor would be assigned to one hospital for a base and take calls

Photograph #UA24-000769, UA 24, IUPUI University Library
Special Collections and Archives.

for the entire system. Because the four hospitals differed in the types of patients seen there, the medical problems encountered called for different radiological skills. Doctors with particular knowledge or concentration in a area might be called in to help. However, work at that time was not yet as specialized as it would become later. Most of the staff in the 1970s had been trained as general radiologists, but with the rise of subspecialties, the quality and range of the clinical studies increased markedly.

As more people were added to the faculty, many of whom had special training in a particular area of radiology, rotating staff through the hospitals seemed less effective. As radiology became more and more specialized, it was nearly impossible for anyone to keep up in all areas. It then seemed more logical to have physicians on call in the various diagnostic areas.

One reason for assigning staff to a particular section was practical; working in one place the clinicians and radiologists came to know each other and learned to work together. Having a hospital base gave a sense of belonging and a feeling of pride in what was being accomplished there. These advantages also had drawbacks. Having staff assigned to one place often worked against the idea of a unified department.

Subspecialties developed even further with the CT. Before the era of the CT, brain scans were largely nuclear medicine studies. It followed that the more knowledgeable the radiologist became in a particular aspect of radiology, the more that radiologist became an expert in the field. Vascular studies were expanding as was pediatric radiology. In time, radiology at I.U. became even more separated into special areas such as interventional, musculoskeletal, genitourinary, gastrointestinal, chest, pediatrics, neuro, ENT, mammography, and nuclear medicine. Soon organizations of subspecialists were holding meetings and conferences and publishing journals specifically for radiologists in a particular field.

Dr. Heun Yune on his return from a sabbatical became concentrated on his career-long interest in ear, nose and throat radiology. Instead of general radiologists who were imaging whatever needed imaging, now there were radiologists looking only at head X-rays or kidney X-



Heun Yune, M.D., performing an arteriography in July 1981 at IU Hospital. From Dr. Margaret Olson's collection.

rays, for example, becoming more skilled as they concentrated on particular areas. This seemed to be the way radiology was moving. With a greater emphasis on the subspecialties of radiology came the need for more faculty trained in those specific areas. And with that expansion of staff the workload greatly increased.

Dr. Klatte had the vision of focusing subspecialization in radiology along clinical service lines, predominantly based on body anatomy. This would later become the universal model, but at that time many academic departments were promoting subspecialization based on the type of imaging equipment used.

While it was an integral part of the Department of Radiology, nuclear medicine differed greatly from the other subspecialties. Nuclear medicine combined diagnosis and therapy. It focused on radioisotopes, how these chemicals were created and how they could become incorporated into the body. The concentration was on the isotope and some kind of recording as to where the isotope went in the body. Many of the studies done by nuclear medicine would later be taken over by the new radiological modalities that were coming along, such as ultrasound, CT and MR.

At I.U. the nuclear medicine section gained more prominence with Dr. Henry Wellman, who had come from the University of Cincinnati, as its chief. Only three months after Dr. Klatte's return, Dr. Wellman had come on staff to head the nuclear medicine division. With the appointments of Dr. Robert Burt and Dr. Miguel Dizon, Henry Wellman began the development of a nuclear medicine faculty. Dr. Dizon was at General Hospital and Dr. Burt at the V.A. Another new member of the nuclear medicine faculty was Dr. Hee-Myung Park, who had known Dr. Wellman at the University of Cincinnati. Dr. Bernard Oppenheim and Dr. Aslam Siddiqui joined the nuclear medicine faculty in 1976. Dr. Wellman had brought with him from Cincinnati a physicist, Dr. Robert Anger. At first, nuclear medicine was responsible, too, for radiation safety, and Dr. Anger took an interest in that. A few years later, radiation safety was separated from nuclear medicine.



While some persons working in nuclear medicine were radiologists, others had a background in internal medicine. On the faculty, too, were radiochemists and pharmacists. Dr.

Henry N. Wellman, M.D., (center, standing)
Chief of Nuclear Medicine. University
Photograph Collection Portrait Collection,
IUPUI University Library Special Collections
and Archives.

Michael Kavula, a radio pharmacist, was there until late 1976. Dr. Bruce Mock came on then, the only person in nuclear medicine in the chemistry-pharmacy area. Dr. Robert Appledorn joined, too. He was a physicist-mathematician in charge of the computers of that time and also became involved in the teaching program.

In the early 1970s, a chemist named Dr. Susanne Von Schuching was at work in a laboratory in the basement of the Clinical Building. She was the granddaughter of the German scientist, Paul Erlich, a Nobel Prize winner who originated a concept on which nuclear medicine depends. This was the idea of the tracer theory, being able to put something on a chemical entity and see where in the body it would go. Highly regarded in her own right, Dr. Von Schuching was at I.U. only a short time. She had come out of retirement to work at the university, and in 1977, she retired a second time. In memory of her, a nuclear medicine library, the Susanne von Schuching Memorial Library, was established. In department reorganization and consolidation, the library became a part of the radiology department library on the lower level of University Hospital.



Bernard Oppenheim, M.D., and his wife Rene. From Mervyn Cohen's collection.

When nuclear medicine was still housed in the Clinical Building basement, the rooms there were small and dark, and the equipment poor. There was some very rudimentary nuclear medicine equipment; the department did not have a new gamma camera. With a gamma camera, it was possible to do a composite image instead of scanning to take video images off the scope. Very few places in the United States in the early 1970s had these cameras.

Nuclear medicine moved out of the basement and upstairs in Long Clinical Building when the radiology department in 1976 went into University Hospital and, in time, nuclear medicine was able to move over there into space that had previously been promised. This move to University enabled Dr. Wellman to expand his undergraduate and graduate education program and also to attract grants and personnel for the larger research investigations he was conducting. This section had been planned by Dr. Fred Mishkin, who also set up nuclear medicine sections at General Hospital and the Veterans Administration Hospital.

In his 25 years at the V.A., Dr. Robert W. Burt developed a well-equipped nuclear medicine section. Early on, in the cramped quarters provided that section, it wasn't possible for Dr. Burt to work at his desk while a patient was receiving a thyroid scan.

The scanner was located in his office, and the patient's feet stuck out over his desk. In time, however, these facilities were enlarged, and new equipment was added.

When Dr. Aslam Siddiqui came to the radiology department in 1976, there was a single, donated gamma camera for nuclear medicine at Riley. There wasn't space, however, for him to have an office there; so he was based at University and walked over to Riley. With the expansion of Riley Hospital, a nuclear medicine section became a part of the new radiology area there, and new equipment was installed. Prior to that, Riley patients had to go to the Clinical Building where there was no assigned physician, and doctors took their turn for one morning or, sometimes, most of the day weekly. After the section's move to University, Riley patients came there. A young technologist carried a portable camera and pharmaceuticals to Riley when needed, but he never took the tunnel, no matter how bad the weather. Once he had had a frightening experience when lightning came in through the transom and rolled down the hallway. After that, even on a sunny day, he chose not to take the tunnel.



Robert W. Burt, M.D., 1990s

By 1975, the nuclear medicine section was using generators to get short-acting isotopes, chemically confirming them. Many technological advances were being made in the 1970s in this field, both in equipment and pharmaceuticals. Nuclear medicine had reached a high point in terms of imaging to diagnose certain types of diseases in patients. However, it was not always appreciated. Nuclear medicine often has been regarded as, in Dr. Burt's words, "a bit of a poor handmaiden of radiology." Because of the techniques used in imaging, the pictures produced by nuclear medicine were less sharp and clear than ordinary X-rays, and the information differed somewhat.



Aslam Siddiqui, M.D., 1990s

Credit is due Dr. Wellman for a very active and close-knit nuclear medicine section. A strong and assertive personality, he shaped a unique division of doctors who were encouraged to work together as a group and share each other's activities. While the section was still located in the Clinical Building, all of the nuclear medicine faculty were involved one fall and winter in writing the first volume of a major book, *The Atlas of Imaging*. Dr. Wellman now sees this project as perhaps too ambitious. This first atlas of nuclear medicine was to have seven volumes. But because of the expense, it was not possible to continue past the first

volume. It was an important achievement, however. With this book, I.U. had published one of the first extensive nuclear medicine textbooks.

On opening day for nuclear medicine at University Hospital, the section was not fully moved in when the activities began. While doctors and visitors were listening to lectures, secretaries and technologists were hastily moving in equipment and supplies from the old quarters in the Clinical Building. Dr. Wellman was proud of the fact that I.U. medical students were introduced to nuclear medicine during their course in radiology. As a medical school, I.U. was unique in having students well trained in both radiology and nuclear medicine.

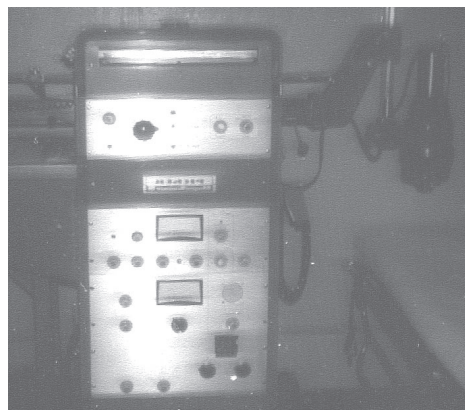


Hee-Myung Park, M.D., performs a nuclear medicine exam. Photo from Radiology Department archives.

Dr. Hee-Myung Park came to Marion County General in 1973 as chief of nuclear medicine there. Nuclear medicine at General had two rooms next to diagnostic X-ray. A few years later the section expanded into a few rooms in a wing where the loading dock was located. Often patients were examined in a hallway where there was a constant traffic of boxes of supplies. In the 1970s, General Hospital had only one gamma camera although about six to 10 brain scans were performed daily.

At that time, there were only two gamma cameras in nuclear medicine at the Clinical Building. Much of the work that was not automated was being done by hand by a technologist, who used a manual well-counter. The technologist sat there, took a tube, put it in the well-counter, turned on the machine, set a count for three to five minutes, and with a pencil wrote the number of counts. Then the vial came out and was replaced by a new one. A whole day was needed to man this machine to do in vitro studies. In 1975, when the hospital purchased a new, automated well-counter, Dr. Park wanted to donate the old machine to one of the developing countries. But his offer was refused because the machine was so archaic.

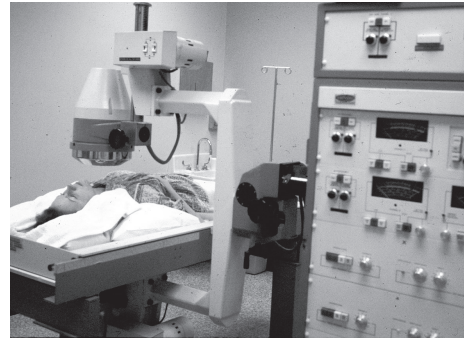
Vascular studies had been established in the 1960s and early 1970s. The Seldinger technique was used to introduce a catheter into a vein or artery. A needle containing a wire guide was



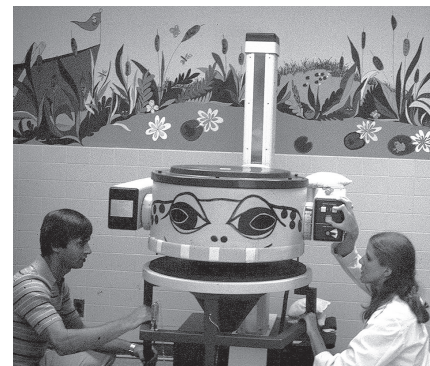
Picker Rectilinear Thyroid Scanner (paper-dot). A machine that started nuclear medicine imaging studies. Used in 1974. Photo from Dr. Hee-Myung Park's collection.



(left) One of the two gamma cameras. (right) An unidentified department member demonstrates patient positioning.



Bruce Mock, PhD., (left) relaxes. (right) A gamma camera dressed up like a frog, helped to sooth patients in Riley. Photo from Judith Kosegi's collection.



inserted into the vein or artery and then removed, leaving the wire in place. Then, the catheter, guided by the wire on which it moved, was inserted and the wire guide was removed. What once required surgery might now be done through a tiny hole in the skin.

In the years before the CT and MR, greater use was made of the angiogram, the recording of a vessel. Radiologists could outline the blood vessels in an organ in order study it. In vascular disease, they were doing a moderate amount of angiography and starting to perform interventional procedures. For example, they were dilating blood vessels that were narrow or embolizing vessels to tumors to try to decrease the tumor's size. Prior to the arrival of the CT, vascular radiologists commonly did internal imaging studies on patients with head injuries.

Equipment in the early 1970s, however, often impeded science. General Hospital was technically outdated. Doctors there would often do an injection for a vascular study only to have the film changer not work or have the



Patti Patrick, nuclear medicine student technologist demonstrates on position for gamma camera brain scintimaging as Bonnie Barker, chief technologist, monitors the camera panel. Photo from Wishard Hospital's *Health Capsule* June 1975 issue.

Bonnie Barker, chief technologist, at the automatic well-counter which analyzes radioactive test samples with the results printed out on the teletype to the left. Small quantities of body substances, i.e. thyroid hormone, can now be determined. Photo from Wishard Hospital's *Health Capsule* June 1975 issue.

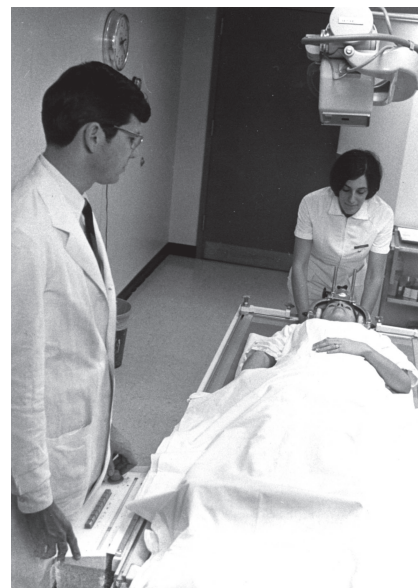


film changer work but not the injector. Interventional radiology would later make use of imaging devices –X-rays and ultrasound and, later, CT scan and, to a limited degree, MRI – to guide minimally invasive therapies.

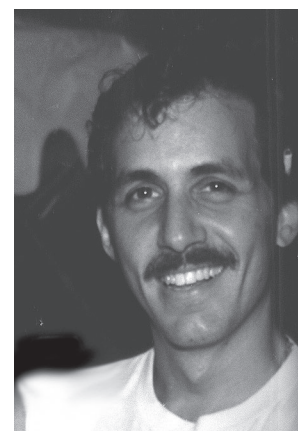
For a number of years, Dr. Yune headed vascular radiology. He had been one of the pioneers in venous interventional radiology and was highly regarded for his work in this subspecialty. When he took a sabbatical in 1985, Dr. Gary Becker then temporarily took over the responsibility for vascular work. Later Dr. Becker followed Dr. Holden as the principal interventional person.

I.U. was one of the original institutions on the Palmas Stent Trial, the first stent used for vascular applications. In addition to this clinical study with Dr. Julio Palmas' invention, the interventional program at I.U. had already been very active in many other areas, such as the embolization of arteries for bleeding, both internal and external, and for inducing tumor necrosis, both in certain benign and some malignant neoplasms. Another area was the use of angioplasty for opening up narrowed arteries and veins, and draining cysts of abscesses located in organs deep in the body without surgery.

Dr. Becker left I.U. in 1990 to go to the Miami Cardiology Institute in Florida. He has become one of the most important persons in interventional radiology. He was appointed to the board of the Radiological Society of North America in 2002 and in 2004 he moved on to serve at the NIH. Both Dr. Klatte and Dr. Holden had excelled in interventional. Dr. Klatte was



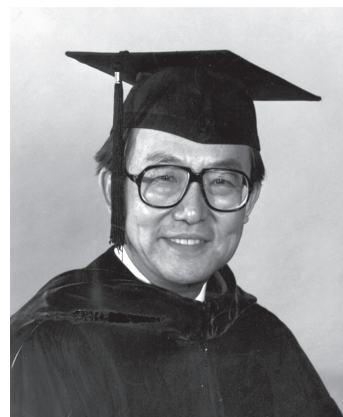
General Hospital's new tomographic machine, utilized here by resident Ted Nicholas, M.D. and Jody Freid, X-ray technician, is equipped to provide radiological studies of millimeter-depth precision and pinpoint abnormalities not readily seen by routine X-ray procedures. In 1970 the radiology department provided more than 85,000 procedures. Photo from General Hospital's *Life In General* January 1971 issue.



Gary Becker, M.D., attending a 50's themed party in the early 1980s. Photo from Dr. Mervyn Cohen's collection.



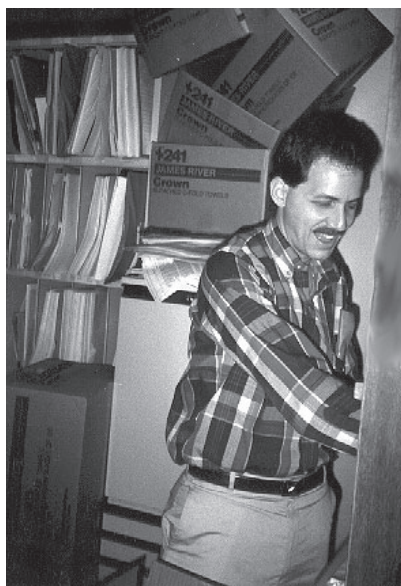
Heun Yune on the Korean National TV (KBS-1) discussing interventional radiology's role in tumor embolization treatment, August 1985. (below) Heun Yune, on the occasion of being conferred a Fellow by the American College of Radiology (FACR) at the 1982 ACR Annual Meeting in Boston. Photo from Heun Yune's collection.



well known as an angiographer before the term interventional came into use. Dr. Holden's three areas of national expertise were venography, pulmonary angiography, and bronchial artery embolization.

After the vascular studies, the next really major change in the practice of radiology was the CAT scan, Computerized Axial Tomography. The CT was considerably less invasive than the vascular studies. Contrast materials could be injected intravenously. With CT, body organs could be imaged in a way much different from conventional X-rays. The scanner was a highly-sophisticated X-ray machine designed to take, within seconds, thousands of individual X-ray shots of thin cross-sections of brain or body tissue, displaying on a television screen a cross-section picture of the body based on computer calculations of the varying density of tissue, fluid, and bone.

The CT made a difference, too, in that with this new modality radiologists had much more direct contact with patients than with the conventional plain film X-ray image. As one former staff member explained it, as a result, radiologists became more knowledgeable, more involved, and more caring. The introduction of these new techniques and technologies increased the need for the subspecialists who with a concentration in one area of radiology could better interpret imaging results.



Gary Becker, M.D., prepares for his move to Miami in 1990.

In mid-December of 1976, the university installed its first CT scanner in University Hospital. Dr. Klatte had traveled with colleagues to England to see this "revolutionary" machine, known as an EMI, which carried a price tag of \$550,000. Since 1972, when the Electric and Musical Industries, Ltd., introduced the world's first CT scanner, the medical profession had shown a high interest in it. Other companies, too, were

Fellow, John Reed, M.D. (center) and other members of the vascular section are shown preparing for a procedure. The photo was taken in 1991 or 1992.

beginning to produce CT machines. To Dr. Klatte it seemed essential that Indiana University install a scanner at the Medical Center.



The early CT was very slow; the images were crude. It might take an hour for processing each patient and a wait of five minutes for a picture to come, but that indeed would change as the modality was improved. Later on, when the other hospitals acquired their own CT scanners, it was no longer necessary to transport patients from Wishard all the way to University by tunnel or from the V.A. by ambulance.

There was much yet to be learned about all that a CT could do. But Dr. Klatte, quoted in a university press release at the time, emphasized a key benefit: “The important thing is to be able to use these techniques to learn more about the patient in a more comfortable way for the patient.” For the patient undergoing examination, the CT made a great difference. Of course, the radiologist also benefited. The introduction of this new scanner radically changed the field of radiology. With such revolutionary technology came a real expansion in patient services.

In radiology before this new technology came in, getting the needed images depended on the capability of the technologists. To take pictures of a lesion on the lung, for example, they had to position the patient on the table and set a level called the fulcrum level of an area on the chest. Usually, in order to image the entire lung, they did a series, a dozen or more 14 by 17 X-ray cassettes. This was tomography of the manual kind. The X-ray film moved beneath the patient at the same time the X-ray source was moving above. This motion would blur everything above and below the focal plane and enable the technologist to image a thin slice. To do a full lung tomography might take an hour.

Each time, after each picture, the technologist needed to go out to the X-ray table, remove the large cassette, and put it in a cart. After doing a series of perhaps 15 of these, the technologist would then pull the cart to the darkroom and take out each sheet of film from a cassette and load it into the film processor. The new CT changed all this. The work became greatly reduced. To look at a lesion in the chest, the



Glenn Moak, M.D. and Charlie Hoover, a tech, at the VAMC in 1983. Photo from Owen Lee's collection.

technologist placed the patient in the scanner, positioned the patient, and then pushed the button for the machine to start. The imaging was done in minutes.

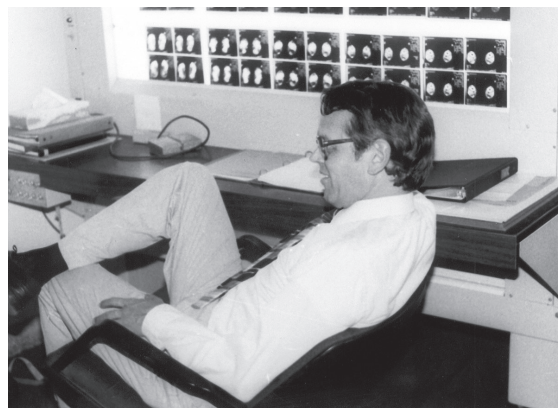
Before the first CT was installed at I.U., radiology there had consisted, basically, of plain films, chest X-rays, barium studies,

and some angiographs. Nuclear scans were limited, dependent on what doctors could do with the pharmaceuticals available to them. With this new modality, radiology changed. No longer a somewhat static speciality, it now became a wholly new field with possibilities yet unrecognized. Having the CT scanner available reduced the number of brain scans done in nuclear medicine. The scanner was easier and faster. Vascular radiology also changed because of the CT.

CTs benefited the radiologists, especially in terms of night work. In time, the MRI would prove to offer other new ways for the radiologist to image body organs. Radiology became much less simple. As Dr. Cockerill reflected, "We were pretty simple in what we did. We had ultrasound, we had nuclear medicine, and we had a will." And then came the improved nuclear medicine equipment, the improved ultrasound equipment, and the CT scanner and MR. Then it was no longer simple.

Prior to the acquisition of the University Hospital EMI, a CT had been installed in the Veterans Administration Hospital on 10th Street. This was a crude, noisy machine, confined only to the study of the head. The national government's concern about Oak Ridge and radioactivity spurred federal funding to get early scanners like this one. The V.A. gained some attention when that first CT went in there. People came to see how it worked.

Limited to an examination of a patient's head, this scanner was a primitive version of the later CT. The patient's head went into a small channel; there was noise coming from the machine, a clicking sound. The images were so poor that today they would be laughed at. But it was a small step into the future. Before that, all



Edward Cockerill, M.D., in the VAMC reading room in 1983. Photo from Dr. Owen Lee's collection.

that V.A. radiologists had were plain films. Dr. Cockerill recalls coming home from a medical meeting in 1974 and putting in a request to the V.A. to buy a CT. Technology had improved by late 1970s when the university installed its first CT scanner. As computers and detectors improved, the images became clearer and better.

To acquire a CT at General, there had to be a justification for its need. Because the nuclear medicine section was at that time conducting a large number of brain scans, General qualified for a CT. At that time, these scanners were used almost exclusively for the brain scans. In 1977 Wishard Hospital gained its own CT. Riley's came later, in 1985.

A special grant from the Picker Company brought Wishard its first body scanner. In the years that followed, Wishard radiologists worked with Picker in the development of that CT, both in neuroradiology and in other body imaging. Clinical applications were proven for their new technologic ring array approach to scanning. Dr. Mary Edwards-Brown and Dr. Jay Franco in their time at Wishard were neuro faculty. Dr. Richard Smith was also there at the time.

It was because of Dr. Holden that Wishard installed a high-quality CT. An area-wide determination group had met and decided that while the hospital should have a scanner; it did not necessarily require one of the best. For the patients at Wishard, they felt, it was enough to have something that would provide images. Dr. Holden saw this as a double standard of care for Wishard patients, one kind for those with money and another for the poor. With the support of Dr. Steven Beering, dean of the medical school, and others, the committee's decision was overturned, and Wishard gained a top-level scanner.

There was no CT then at Riley Hospital. When the new Phase 3 building opened in 1986, all of this changed. With the Riley's new addition, the radiology space more than doubled. It was a completely new department with the latest equipment. Digital fluoroscopy was considered an essential requirement, and vendors were approached to

The first 1.5 T MRI on campus. Eugene C. Klatte, M.D., with Cindy Huitema, an MR technologist, demonstrates the new MRI with a patient, 1986. Photograph #UA24-000687, UA 24, IUPUI University Library Special Collections and Archives.



provide this. Fisher Imaging provided one digital fluoroscope unit, and G.E. provided a second. For about four years, Riley had the only G.E. digital fluoroscope unit in the world. Riley was the first children's hospital and one of the first five or six U. S. hospitals to install computerized radiology. Technology became all important in the 1980s.

The 1980s were exciting years for I.U. radiologists. The CT scanner had radically changed radiology, and the MRI brought even more change. The CT opened the windows to the brain. With an MRI, it was possible to see diseases not seen before. With the CT the physicians' workload at the Medical Center increased, and this revolutionary new modality expanded it even further. Throughout the 1980s radiologists at Riley Hospital were doing MRI studies on pediatric patients. This early access allowed Dr. Mervyn Cohen to publish two books on pediatric MRI, the first in 1986.

Indiana University was one of the first medical schools in the world to acquire a Magnetic Resonance Imager, or MRI. It was a 0.15 Tesla resistive magnet machine made by Technicare. In 1982 it was installed in the basement of the radiation therapy department at University Hospital, servicing all four hospitals. Dr. Klatte did not restrict its use but gave all the faculty access to it. This led to their gaining a better understanding of this new technology and what could be done with it. Later, an MRI was installed at Riley in a newly-constructed facility. Wishard gained a new scanner in the late 1980s, and in 1989 a second MRI was installed in the new high technology center in the basement at University Hospital. The V.A. obtained an MRI in the early 1990s.



Mary Edwards-Brown, M.D.



Richard Smith, M.D.

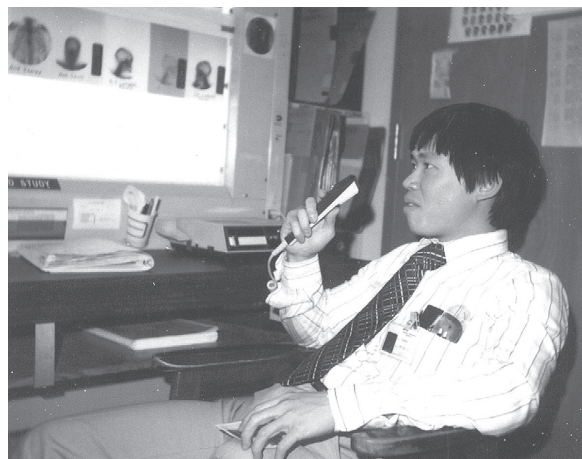
Dr. Edwards-Brown and Dr. John Scott as neuroradiologists were reading MRIs at University Hospital and, later, at Riley when an MRI was installed there.

Steven Beering, M.D., on the roof of University Hospital, ca. 1970. Photograph #P Beering, Steven 004, University Photograph Collection Portrait File, IUPUI Library Special Collections and Archives.

Owen Lee, M.D., 1982, in the Wishard reading room. Photo by Hee-Myung Park, M.D.. Photo from Owen Lee's collection.

For one year, Dr. Edwards-Brown was the only neuroradiologist on the Medical Center campus, covering the circuit of University, Wishard, and Riley. She was assisted by three fellows, one at each hospital. Neuro attracted a great deal of interest at this time. Staffing was done between seven and eight o'clock in the morning so that residents interested in neuroradiology could come in to see the MRI before beginning their own daily schedules.

The growth in technology quickly triggered growth in other areas. As the number of patients increased, the workload multiplied. Increased work called for increased staff. This proved particularly true in pediatrics where children as patients, often with health problems unique to children, required special care. For years Dr. Cohen pushed for a radiology nurse position at Riley. It took quite a while to gain recognition that, particularly for children, this was necessary. However, in time it came about, first at Riley and then at



Radiology equipment in 1988. Photograph #UA24-000763, UA 24, IUPUI University Library Special Collections and Archives.



(left) Riley Hospital expansion construction, May 1984. Photograph #584-1928-43. (right) Riley in the 1980s. From the University Photograph Collection, Building Photographs File, IUPUI Library Special Collections and Archives.



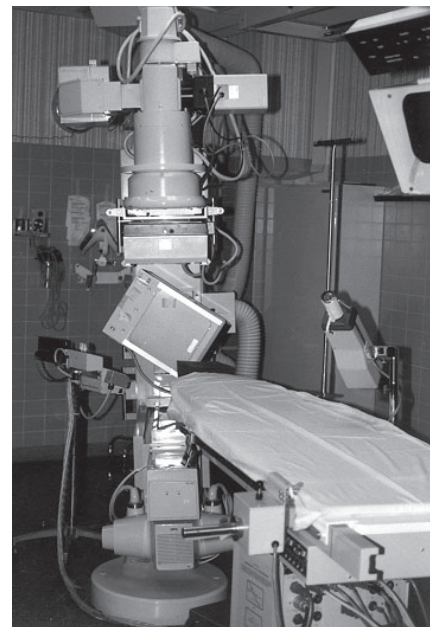
Riley Hospital patio April, 1989. Photograph #489-3608-29, University Photograph Collection Building Photographs Collection, IUPUI University Library Special Collections and Archives.

University. Today there are many nurses working in radiology. Because of the volume of work being done at Riley, it became necessary to separate it as a hospital on call and to assign specific people to handle the night and weekend work there.

Dr. Klatte deserves credit for negotiating with the Veterans Administration for funds to help expand the department there and to add equipment. Without his efforts in this regard, working at the V.A. Hospital would have been much more difficult than it was. It was not easy to find persons who wanted to work there, and a number of people came for short stays and left. The success of radiology at the V.A. belongs in large part to the few faithful ones who saw it as a very good place for them to work.

At University Hospital, too, the X-ray department expanded. Under Dr. Klatte's direction, a new outpatient radiology section was added, intended to serve the orthopedic group and general physicians.

There came a time when it seemed imperative to separate inpatient and outpatient work at University Hospital in order to provide care more efficiently. Inpatient services were located in the basement; outpatient radiology was moved to the first floor of the ambulatory care building. All of the chest and orthopedic work would be done there and mammography as well. The outpatient building was connected by elevator; but it was not adjacent to the inpatient section, and it was not possible to have dual coverage by the same technologists. So that both areas would be adequately covered, it became necessary to hire additional technologists. Also, as University Hospital expanded, the physicians' workload there grew accordingly. Increased volume, in turn, called for additional personnel, new and up-to-date equipment, and the need to design more space for the work to be done. Unfortunately, this need for more spending came a time when the

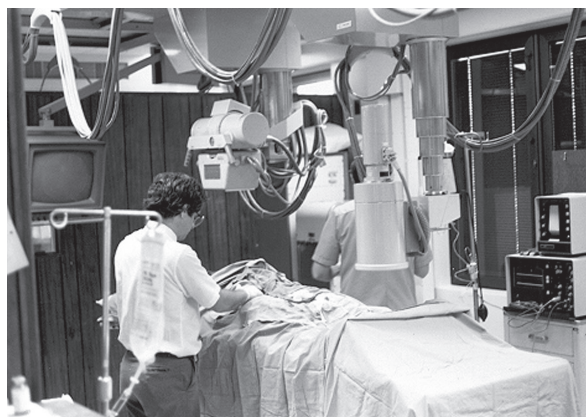


GE LU arm in University Hospital.
Photo from Margaret Olson's collection.

Fourth year resident Victor Jones, M.D. performs an arteriography in May, 1982. Photo from Margaret Olson's collection.

department was being encouraged to cut back on costs.

It was in late 1970s that many changes came in the management of the department's activity as well as support personnel. Pat Copp Spaller went to Riley in 1978, filling a position of chief technologist there, and Mary Ann Helms Campbell at the same time went into a similar post at University. These hospital radiology areas were growing rapidly in terms of technological equipment and also in terms of increased faculty with the recruitment efforts to bring in specialists.



In the 1980s, a significant number of I.U. residents recruited to the faculty proved to be excellent choices. Among these were Drs. Martin Baker, Valerie Jackson, Donald Schauwecker, Kenyon Kopecky, Robert Tarver, and Dewey Conces. It was not uncommon at that time for many faculty members to have taken their residencies at I.U. Dr. Klatte saw merit in this. He saw advantages in bringing in persons whom he had known for four years and who were well acquainted with the department and its personnel. As a result, he gained a good group of people who worked well together.

Both advantages and disadvantages came with the recruitment of I.U. residents. The fact that they knew the staff and had worked with them was a benefit. Their strengths and weaknesses were generally known. That residents wanted to stay on at the university spoke well for the radiology department and its faculty. These residents wanted to stay on where they felt they would benefit most. On the other hand, the argument could be made, too, for the benefits of diversity both in background and experience in hiring new faculty. This side of recruiting would gain popularity in time.

Recruits from outside the university needed time to familiarize themselves with the department. Both the staff and the new faculty had to learn to work cooperatively in a setting which was familiar to one group and unfamiliar to the other. New people brought in new ideas, new perspectives; a fresh approach had advantages, too. The best solution, Dr. Klatte found, was to have a balance, to bring in both types of recruit. What mattered most, he felt, was to have a staff of bright, capable people.



Pat Copp Spaller, RT

The Klatte Years

These were important qualities, too, to have in the office personnel of the department. Dr. Campbell's secretary, Winfrieda Glenn, continued as Dr. Klatte's secretary until her sudden death in 1977. Norma Hazelwood succeeded her and, later, Sally Shaw served as his secretary. Another capable member of the office staff was Barbara Wiggles, secretary to Dr. Miller. Much of the success experienced by the Department of Radiology at this period of expansion depended on a supportive group of employees. Film file clerks, for example, were critical to the operation of the department. Clinicians wanted access to information, to the films, and to radiologists' reports. Typists no longer took direct dictation while a doctor read the X-ray film from the view box, but they still were vital to the department's routines. Receptionists who checked in patients were important, too. This support staff was much appreciated by the people who benefited from their service.

The entire radiology staff was invited to the summer parties which Dr. Klatte and his wife Barbara gave at their 71st Street home, a large, five-acre area with ample room for entertaining a large contingent of guests. As the department grew, there seemed to be a greater need for bringing everyone together and for creating this kind of summertime family reunion.

Dr. Klatte's parties were memorable. They were always held outdoors under a tent, and each year the party had a



Dewey Conces, M.D., 1980



Martin Baker, M.D., 1980



Don Schauwecker, M.D.



Kenyon Kopecky, M.D., 1980



Robert Tarver, M.D., 1980

(l-r) Heun Yune, M.D. and Roscoe Miller, M.D. in 1983. Photo from Owen Lee's collection.

different theme. The music, the food and the costumes worn by the guests were all geared to that theme. It might be a foreign country or an ethnic group or, perhaps, a particular culture.

One year the theme was Hawaiian; another year, it was the 1950s. At one party which had a Western theme there were big horses on the lawn, not live horses but manufactured ones.

One year, when the party's theme was ethnic heritage, Dr. and Mrs. Yune came in traditional kimonos from Korea. Another member of the department remembers a conversation with Dr. Yune. He stuck his foot out of his robe and said, "See these sandals? These were made in Korea." He then took hold of the fabric of his robe and said, "See this? It was made in Korea." Then he took hold of his cheek, pulling it out, and said, "And this – this was made in Korea." Then he just laughed.

For years there were department Christmas parties. In a sense, it celebrated a year of hard work and made everyone look forward to another good year of working together. When the department was small, the parties were small. Then as more and more people came into the department, the parties grew larger. Early on, the annual Christmas party was held in the Hurty Hall classroom and, later, in a big classroom around the corner from Hurty Hall B. The banquet room beneath the G.T.E. Clay Court tennis courts was a later site, but soon the group outgrew that. For several years, the Christmas party was held in the ballroom of the Madame Walker Theatre.

People remembering department Christmas parties have a special recollection of Dr. John Robb as Santa Claus. Because he was rather rotund and had a ha-ha-ha laugh, he was a prime candidate to be Santa Claus, and he thoroughly enjoyed the



Sally Shaw, 1991



Barbara Wiggles at Eugene Klatte, M.D.'s retirement party in 1991.



(left) Eugene Klatte, M.D., and his wife, Barb in 1985. Photo from Mervyn Cohen, M.D.'s collection.



(right) Hayrides were popular at the 1985 Nashville Country-themed party. Photo from Carlotta Griner's collection.



(left) Captain Eugene Klatte, M.D., takes a break from videotaping the Caribbean Cruise in the Desert, 1986. Photo from Carlotta Griner's collection.



Henry "Hank" Wellman, M.D., 1986. Photo from Mervyn Cohen, M.D.'s collection.



Vernon Vix, M.D., and Fred Klink, M.D., 1986. Photo from Mervyn Cohen, M.D.'s collection.



Christmas Party, 1982. (l-r) Richard (Buck) Beeler, M.D. (4th year); Robert (Bob) Rust, M.D. (4th year); Rene Du Cret, M.D. (1st year); and Jack Mail, M.D. (2nd year). From Dr. Margaret Olson's collection.



Christmas, 1982. (l-r) Frank Rabe, M.D. (Assistant Professor) and Peter Rothschild, M.D. (1st year). Photo from Dr. Margaret Olson's collection.



(right) Mike and Sharon La Masters, 1984. (left) Tom and Debbie Gibbs attend the 50's themed party, 1984. Photos from Mervyn Cohen's collection.



(left) Kenyon Kopecky, M.D., and his wife, Sue, 1984. (right) John Robb, M.D., and his wife, Marie, 1984. Photos from Mervyn Cohen's collection.



(left) August 1983 *Roaring Twenties* party at Dr. Klatte's house. Kathy Straley is shown with Assistant Professor James (Charlie Chaplan) Ellis, M.D. From Dr. Margaret Olson's collection.



(right) Residents Eldon (4th year) and Margaret Olson (3rd year), 1983. From Dr. Margaret Olson's collection.



International Bazaar, September 6, 1986. Hee-Myung Park, M.D., and his wife, Grace, are shown wearing traditional Korean dress and suit. Grace's dress is more decorative with embroidered emblems of cranes which are considered nearly sacred birds in Korea. Mrs. Robert Burt (r) is shown in a French costume.



role. He played Santa Claus, and Mrs. Robb became Mrs. Claus. They teamed well together; at one of the summer parties, they went as Laurel and Hardy. The Robbs liked to entertain faculty and fourth-year residents at their cottage down on the Johnson-Brown county line. Many times faculty members held dinner parties in their homes or outdoor picnics and invited their colleagues and the residents with their spouses. These parties provided good opportunity for the residents and their families to become better acquainted. The social contacts were considered important for the unity of the department. This was not entirely new at I.U. In Dr. Campbell's department, there had been similar occasions for congeniality and sociability, too. But because the numbers then were smaller, parties were smaller, and there was less need for the organization that later parties required.

Camaraderie was the warm, cohesive force in the department. It was not limited to social events. Working together, supporting each other was considered highly important. Dr. Klatte strongly emphasized the need to excel as a group rather than as individuals. If those who were strong were outgoing and cooperative in assisting the



Residents and faculty at the radiology Christmas party in 1982. (l-r) Residents: Douglas Kuehn, M.D. (2nd year), Phyllis Martin-Simmerman, M.D. (3rd year); Richard Lowe, M.D. (2nd year); Chet Rees, M.D. (1st year); Robert Tarver, M.D. (3rd year); Josef Wenker, M.D. (1st year); Kenyon Kopecky, M.D. (3rd year); and John (Jack) Mail, M.D. (2nd year). Photo from Dr. Margaret Olson's collection.



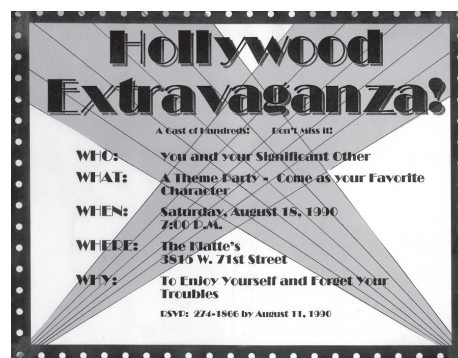
Dr. John Robb and his wife Marie enjoyed playing Santa & Mrs. Claus at department Christmas parties.



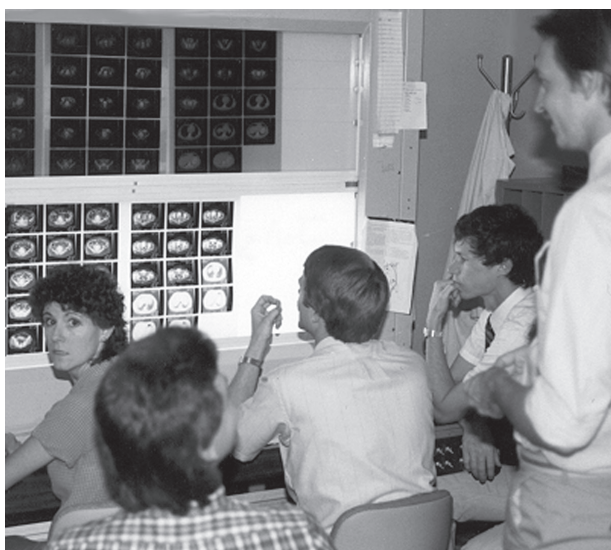
The Robbs as Laurel and Hardy at the 1990 Hollywood Extravaganza event hosted by Dr. Klatte.

less experienced members, the department as a whole would then become recognized as both strong and successful. Much of the camaraderie in the department was built around him. He inspired a tremendous loyalty among his faculty.

Certainly this kind of camaraderie existed in the Campbell era and perhaps, to a lesser degree, before that, when everyone worked together in a relatively small space. Some staff members have felt that with a steadily growing department much of this close family feeling has dissipated. Dr. Klatte was well aware of the advantages in continuing a cooperative working environment with everyone's having a justifiable pride in the department's achievements. Giving parties was only one way in which he promoted a unified department. While it was no longer possible to be working closely with everyone else on staff, still it was possible to get



to know many others throughout the department. It was still possible have respect for their efforts and achievements and to share with them. That kind of family atmosphere helped keep people in the department and brought new people in.



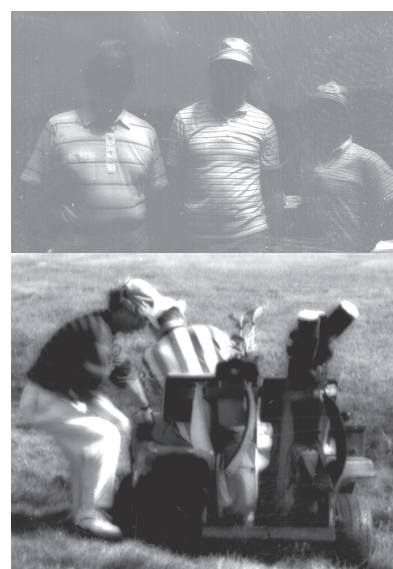
At the IU Hospital viewbox: Assistant Professor Margaret Olson, M.D. (facing camera); Cory Gray, M.D. (1st year); Rick Lowe, M.D. (3rd year); Phil Woodbury (GU resident); Jim Wehrenberg, M.D. (2nd year) in July 1984. From Dr. Margaret Olson's collection.



The 1980 radiology party at *La Cantina de Pancho Klatte* showed Dr. Klatte's creative side, with the construction of a Mexican cantina in his back yard. (left) Hitting the piñata. (center) Party host Eugene Klatte, M.D. (right) Dr. and Mrs. Gary Becker in costume. Photos from Dr. Owen Lee's collection.

Growth engendered more growth. This fact impelled Dr. Klatte in the late 1970s to seek help with the financial management of the radiology department. As the number of department clinicians grew, the radiology services within the four hospitals began to expand even more, and managing became more complex. It was at that time that Dr. Klatte created a new administrative post and in 1978 brought in Michael La Masters. With the continued growth of the department and expanding radiology services within the hospitals, there was a real need for a financial administrator. Mr. La Masters' experience had been in military financial management; radiology and university and hospital management were for him a new and uncharted field. But he saw it as a major challenge. Linda Holck was the administrative assistant when Mr. La Masters came into the department. Allegra Radspinner replaced her as his assistant.

The situation, while it was changing in 1978, was not as complicated as it would become. At that time, there was no direct billing. Money from the hospitals went into university accounts, and doctors were paid. Much of the need for management came in taking charge of and overseeing the financial aspects of University and Riley Hospitals. There was less financial involvement with Wishard and the V.A. then, only the handling of some of the hiring practices done there.



(top) Eugene Klatte, M.D., Kenyon Kopecky, M.D, and Hee-Myung Park, M.D. at a Kodak-sponsored golf outing in 1989. (bottom): Robert Holden, M.D. driving the golf cart. Photos from Dr. Hee-Myung Park's collection.

Michael La Masters lends a helping hand on moving day at Riley Hospital, 1986.

More complexities arose as changes in reimbursement called for other changes. Rules and regulations, particularly those relating to reimbursement, led to an increase in paper work. A major impact on department administration was a Medicare ruling called TEFRA, which stated that hospitals no longer could pay for the radiologists' professional services by a simple percentage method. From then on, radiologists would need to bill patients directly. Hospitals then began to come under closer scrutiny, and budgets tightened. It was not as open as it had been. Other payers began to slow down their reimbursements. The department began to be faced with budgets which called for reducing the number of people, not adding more. The financial environment became much tighter as time went on.



As a result of the TEFRA ruling, the Department of Radiology contracted with a company in Michigan, Physicians Bookkeepers, to handle billings. That move led to another major undertaking, the formation of a corporation through which these billings could be run. Indiana University Radiology Associates was created in early 1979. Acting as a corporation, radiology faculty members elected to invest money in a savings program, a self-generated endowment for the department.

Dr. Klatte deserves much credit for setting up this corporation. He wanted to see the department's endowment developed somehow so that resources would be available to fund research or teaching programs in future years when it might be difficult to do that with patient funds. Fortunately, this plan was in place at a time when the United States enjoyed the longest sustained increase in stock market history. The chairman and the new executive committee of the department, which was also the executive committee of IURA, elected to begin expanding the benefits program for physicians. As a result, with IURA, set amounts have been provided for physicians for



Allegra Radspinner, 1986; Allegra, 1991, inset.

continued medical education and for reimbursement for medical expenses as well as disability insurance and life insurance.

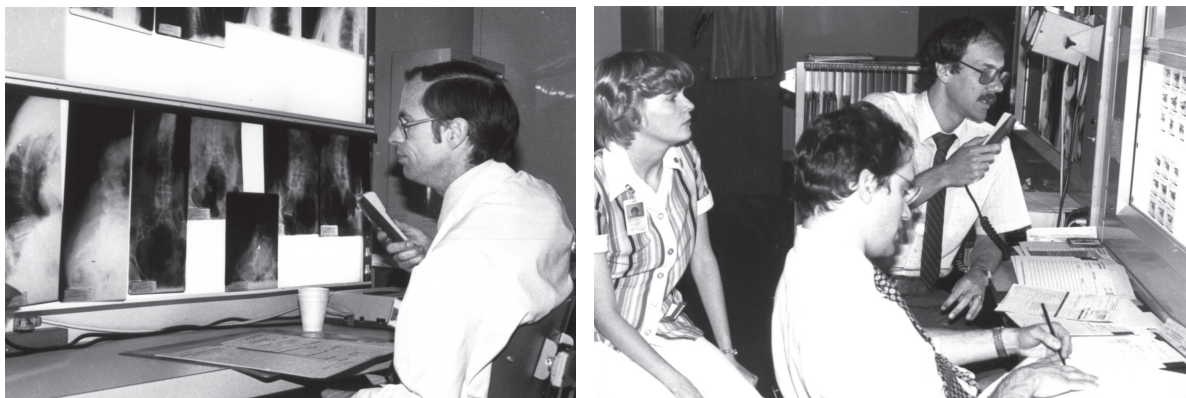
The weekly Friday evening conferences set up by Dr. Campbell in the '50s were changed when Dr. Klatte came in as chairman. He established a 7:00 a.m. lecture for residents four times a week. The Friday night meetings were then held once a month with a lecture from 5:15 to 6:15, followed by a dinner and then a lecture following that. Instead of resident presentations, there were guest speakers. The guest speaker often came, too, to the noon conference. Residents in the 1980s, however, were found to be more reluctant than earlier residents to give up their weekend evenings.

Over time, attendance at the Friday night sessions tapered off, and they were scheduled on other evenings to be more convenient both for residents and for practicing radiologists in the area. The lectures were moved to a small classroom when the Myers Auditorium at Wishard Hospital proved too large for the number attending. Radiology lectures continued on a regular basis but with some changes. The passing of time called for new techniques and new ways of creating interest.

The medical school's annual continuing education course in radiology was still a regular department event. These were usually three days in length and varied in subject from year to year. Persons invited as speakers were recognized experts in their fields. These lectures provided an excellent opportunity for participants to keep up with all kinds of changes in the field of radiology. In time, however, these annual courses were replaced by other types of conferences.

In May 1981, the Department of Radiology, sponsored a course called, "Frontiers in Radiology," which highlighted radiological techniques not generally used or even available five years earlier. Nine distinguished guest lecturers and 20 experts from the I.U. faculty focused not only on new methods of using X-ray and new interpretation techniques but also on new non-invasive methods of producing images for diagnosis. These included cardiac scintigraphy, echocardiography, and digital video subtraction angiography. Dynamic computerized tomographic scanning and breast and prostate ultrasound were other topics discussed. Radiology's future was anything but static. In only a few years, what was considered amazing in 1981 would seem routine.

The staff luncheon on Thursdays was another means of bringing faculty together. Dr. Klatte wanted to minimize the separateness of staffs in the four hospitals by establishing this weekly lunch. It provided a good opportunity for someone from Wishard to chat with a colleague from Riley or the V.A. During the luncheon meeting, occasionally there was current business to discuss or a need to update information on some department concern, but basically it was a social function. The staff luncheons continue today.



In 1981, Wishard's radiology department had grown to approximately 95 employees, 10 of which were physicians. The department was a team conducting 130,000 procedures a year. (left) Assistant Chief Radiologist, Justin Wass, M.D., interprets and dictates the results of a patient's spinal x-ray. (right) Radiologist Daniel Whitehead, M.D., dictates the results of a patient's gall bladder and pancreas ultrasound films while John Morton, M.D., makes notes. Photos from Wishard's *Health Capsule* May-June 1981.

When Dr. Burt came to I.U. in 1972, just out of fellowship training at the University of Pennsylvania, he was told about the faculty luncheon. Being low on funds, however, he chose to bring a sandwich from home rather than pay for his lunch at the Union Building. When someone asked him about his absence and assured him there was no charge, Dr. Burt went over there the next Thursday. When he walked into the rather small dining room, he was surprised to see only six or seven people seated at the table. Perhaps there were others like him, he thought, who had some reason for not coming, but he found that was not true. This was the entire staff at that time. However, Dr. Klatte's recruiting soon brought many new people onto the faculty.

In his chairmanship, Dr. Eugene Klatte achieved a great deal. It was not only in terms of a larger faculty that Eugene Klatte strengthened I.U.'s radiology department. While he did purposely seek to expand the department by recruiting outstanding new staff, he wanted to utilize that staff in accomplishing his broader goals.

His high focus on academics won him recognition. Credit has been given him, too, for positioning the department at that time as a leader among clinical radiology programs in the United States. He received national recognition in professional societies, serving as a board examiner and fellow in the American College of Chest Physicians and a fellow in the American College of Radiology. He held offices in the American Roentgen Ray Society and in 1972-73 was president of the Society of Chairmen of Academic Radiology Departments. He was one of the founding members of the Society of Pediatric Radiologists. In 1989, he received a Gold Medal Award from the Association of University Radiologists and,



Robert Burt, M.D., 2002

in 1991, a Gold Medal Award from the American Roentgen Ray Society. In 1998, the Radiological Society of North America would also present him with a Gold Medal Award. At I.U. at the end of his chairmanship, he was recognized with the Glenn W. Irwin, Jr., Award for Distinguished Faculty Service.

His honors were well deserved. The department had seen a dramatic growth in the 20-year Klatte era, and it had gained stability with more full-time staff. In his recruiting, he had not only increased the number of faculty but had drawn in young radiologists, many from the I.U. residency program, and had generated a broader coverage of subspecialties. With the department moving into a sounder financial position when he came back from Vanderbilt, Dr. Klatte had been able to expand departmental space over the years and to acquire the newest technologies as they became available.

I.U. radiology lost one of its most remarkable members during the Klatte era. Roscoe Miller's sudden death in December 1984 shocked the department. He had contributed in so many ways to the operation of the department and to the training of future radiologists as well as to advancements in the practice of radiology. Much deserved credit is given to Dr. Miller for the functional design and operation of the administrative areas of University Hospital. Film processing and film filing methods which he initiated are still in use in many large radiology departments throughout the world. He chose and installed I.U.'s first automatic film processor and reorganized and established the radiology teaching film which is still in use. Dr. Miller was responsible for setting up the first departmental illustration laboratory for making slides and photographs for publication. For teaching students, residents, and technicians, he redesigned the Fesler Hall meeting room, adding blackboards, a projection booth and screen, and a practice X-ray table and panel.



Roscoe Miller, M.D., and his wife, Dorothy, at one of the department's Christmas parties in the early 1980s.

Memories of Roscoe Miller, M.D.

"[Roscoe Miller] was casual. He always wore a tie and a white lab coat, but he wasn't a suit kind of guy. [The lab coat] was always flapping behind him because he was always in a hurry. Back and forth, wherever he was going. The reading room, where he sat, had TV monitors. We had fluoroscopy rooms where we did upper GIs and barium enemas. Then, the interventional department had three fluoro rooms at that time. And all the monitors were connected to his reading room. So he could sit back there and any room that was doing fluoroscopy he could see on the screen what was going on. It was funny because he also had intercom in all the rooms; so if you were doing an upper GI or something with a resident, and the resident wasn't really sure what he was doing, you'd hear this loud, booming voice come over the intercom, 'Son, you're too low. Son, move over there.' Of course, the resident had no idea where it was coming from – thought it was the voice of God, and a lot of times it was. We [the technologists] would sit back and laugh at them."

- Fred Wyant, Wishard technologist

I have two favorite memories about the eminent professor, Roscoe Miller, father of the air contrast barium enema. [One time when] I was a junior resident and going through a GI rotation. Dr. Miller, while sitting at his command module looking at the monitor of multiple rooms, became aware that my patient was hearing impaired. Not wanting to miss an opportunity to teach, he ran into the room, and began to instruct myself and another resident on how to communicate with this person during a GI exam. The patient, a young man, was lying supine on the exam table, dressed in his gown, ready for the exam to begin. Dr. Miller proceeded by hitting the patient on the upper arm once, then put his own hand to his mouth and stopped breathing to indicate what the patient was to do. He then enthusiastically hit the patient twice and indicated a clockwise rolling motion with his right hand, the patient seeing this, but not really acknowledging anything. As Dr. Miller hit the man on his shoulder three more times, with more enthusiasm, the patient sat up and at the same time slugged RM hard in the abdomen. RM staggered back, regained his composure and said something like "Now you know how to give instructions to someone deaf," and strutted back to his command center.

The second story took place when I was the senior resident on the GI rotation. The day was not very busy, and RM was telling us about some battle in Italy during WWII, and the tactics used. Somehow, the conversation turned to hand-to-hand combat and the use of judo in these situations. About this time the attending gastroenterologist and his entourage of fellows and residents came around the corner to review some films.

Dr. Miller stood up, pointed to the tallest resident and yelled "come at me like your attacking me with a knife." They all stopped in their tracks, then RM repeated his unusual request. The tallest MD, nervously put his right hand up and took steps toward RM. RM, showing great courage in the face of this "attack", showed us a slick judo move, tossing the resident on his back. RM then turned to us, smiled, and we all went back to the GI command center, followed hesitantly by the internists.

Rumor had it that Dr. R. Miller as an army officer in WWII actually taught dancing at the enlisted and officers clubs in Europe.

- Jose Trujillo, M.D., Resident 1976-1980

Dr. Klatte in his memorial to Dr. Miller called him “the evangelist of excellence.” Indiana University had gained much recognition because of Dr. Miller’s reputation as a national and international authority on gastrointestinal radiology, and the medical students, residents, and faculty had learned much from him. He had written three books and had been published many times in scientific journals. In 1976, Dr. Miller had been named distinguished professor, the highest honor awarded an I.U. faculty member.

IN MEMORIAM

Dr. Roscoe E. Miller died suddenly on December 14, 1984. Dr. Miller received his Bachelor of Science and Medical Doctor Degrees from Indiana University and served his residency in radiology at the University of Chicago. For 28 years, he was a faculty member of Indiana University where he attained the rank of Distinguished Professor, the highest honor that can be bestowed upon a faculty member. He was a nationally and internationally renowned authority on the subject of gastrointestinal radiology, having 195 scientific publications and three textbooks to his credit. His particular interests were in the technical aspects of the gastrointestinal examination; he developed many innovative techniques, and was always the evangelist for excellence. He was a man who dearly loved fine art, and this was manifested in his work to the extent that he was once described as the Michelangelo of the gastrointestinal tract, using barium as his pigment. There was probably no one in the world who knew more about barium and its medical use. The Society of Gastrointestinal Radiologists awarded him the Walter B. Cannon Medal in recognition of his many contributions to gastrointestinal radiology. Dr. Miller was a noted world lecturer: he once delivered the Litchfield Lecture at Oxford University, Oxford, England.

Roscoe was a devoted teacher who wrote extensively on teaching methods. He was the strongest advocate of optimum patient care. His daily motto, “Treat every patient as you would like a member of your immediate family treated,” aptly eulogizes him.

During World War II, he served in the European theater as a combat artilleryman, rising from the rank of Private to Major, and he received the Bronze Star and Belgian Fourragere for gallantry in action during the Battle of the Bulge.

Roscoe was a loyal friend and colleague to many of us who had long association with him. His wise counsel will be sorely missed.

He is survived by his wife, Dorothy, and sons, Andrew, Jeffrey, and Douglass.

EUGENE C. KLATTE, M.D.



Roscoe E. Miller, M.D.
1918–1984

The
Holden
Years

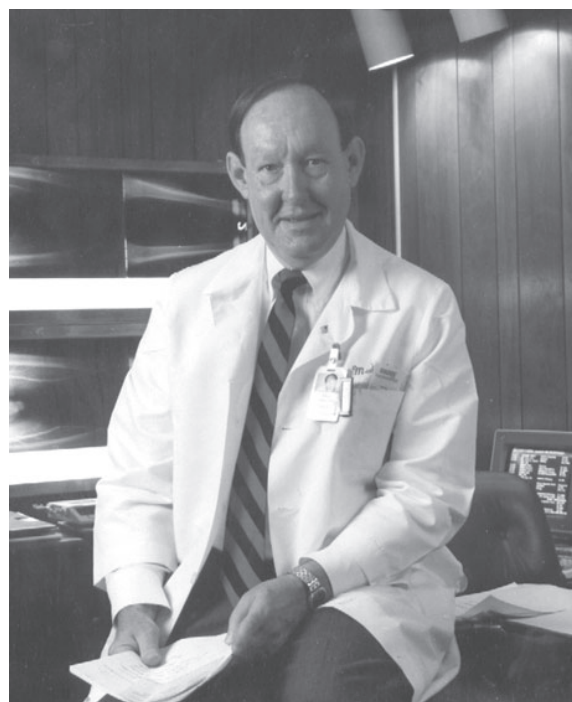
1991-1995



Dr. Klatte in 1991 resigned his chairmanship. In the 20 years of his tenure as chairman, the department had seen enormous change. The next 10 years would change even more, bringing extraordinary innovations and moving the department into many programs involving 21st century science and technology.

Two department chairmen would lead in the new decade, Dr. Robert W. Holden, who served as radiology chairman from 1991 until 1995 when he was made dean of the medical school, and Dr. Mervyn Cohen, who moved from his post as chief of Riley Hospital radiology to become the department's fifth chairman.

A graduate of the I.U. School of Medicine, Dr. Holden had served on the faculty since 1973, when he returned to Indiana after a residency at Vanderbilt University in Nashville, Tennessee. In his long association with Dr. Klatte, Dr. Holden had developed a deep appreciation of what his predecessor had envisioned for the department and what could be made to happen in the years ahead. But Dr. Holden also had his own experience and vision to draw on. As chief of radiology at Wishard for 20 years, he had been most successful.



Robert Holden, M.D., July 1991 Photograph #P Holden, Robert 001, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

Dr. Walter Daly, a former dean of the medical school, describes him in this way: “[Dr. Holden’s] strength is identifying a vision which is contemporary with the future



and marshaling the resources to carry through with it. He’s a passionate, honorable, emotional, hard working, and surprising individual. By ‘surprising’ I mean

Walter Daly, M.D., Dean of the Medical School, is standing on the roof of Cavanaugh Hall with University Hospital and other buildings of the Medical Center visible behind him. Photograph #Daly, Walter 006, University Photograph Collection Portrait File, IUPUI University Library Special Collections and Archives.

that he's sufficiently independent in his thinking he doesn't follow the obvious railroad track."

In 1996, when Dr. Holden succeeded Dr. Daly in the deanship, he became the only radiologist in the School of Medicine's history to become the school's dean. In his own turn as chairman, Robert Holden followed much the same management style as Dr. Klatte, although he was thought by some people to take a more hands-on approach to the day-to-day activities within the department. Perhaps that came from his many years of heading Wishard Hospital radiology. Dr. Holden was kind and considerate of department members, inviting their ideas and suggestions; yet, in the long run, his decision carried.

During his tenure, he sponsored a number of innovations. As the new chairman of the I.U. Department of Radiology, Dr. Holden centered his attention on the three areas of teaching, clinical radiology, and basic research. The department was well recognized for its excellence in the first two of these areas, and the acquisition of the state's only PET scanner would enhance the growth of the research program.

Recognizing the need for a greater emphasis on research at the I.U. Medical Center, Dr. Holden wanted to break new ground in this third area. Basic radiology research was becoming a matter of increased interest among radiologists nationally. On a year-long sabbatical at the National Institutes of Health in 1989-1990, he had worked with radiologists from medical centers across the country in developing strategies to improve radiological research in the United States. He had also helped in the planning of a new NIH laboratory for radiology research and the establishing of NIH research fellowships. It was Dr. Holden's expectation that I.U. would become a leader in this area, too.

Dr. Robert Kruger was brought in to head a new basic sciences research component of the department. Earlier, some attempts had been made to initiate an enhanced radiology research unit at I.U., but they had not proved successful. Dr. Klatte and Dr. Holden had not been able to find the person they felt best qualified to oversee basic research. Then Dr. Kruger became available and was hired right away. He came



Edward Cockerill, M.D., 1990s.

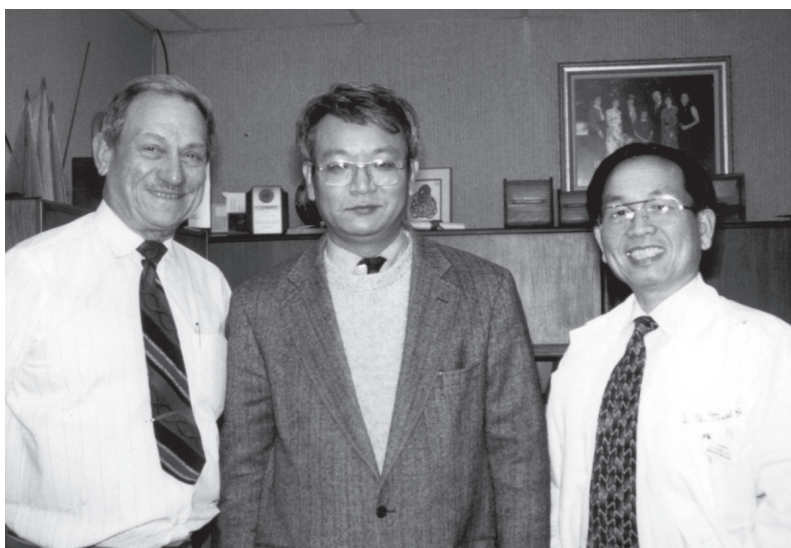
from Utah, where he had had a successful career which included the development of digital angiography. With Dr. Kruger recruited, Dr. Holden had set in motion the beginnings of the Division of Imaging Sciences. He also began to strengthen research activities in other areas of the department and helped to set up the animal research laboratory where interventional research was being done.

Dr. Kruger served, too, on Dr. Holden's departmental executive committee, which included the chiefs of the hospitals. With the departmental structure basically built around the four different hospitals, it was important to involve the persons heading the radiology sections in these hospitals. Dr. Donald Hawes had been recruited from Iowa to become the radiology head at Wishard when Dr. Holden as chairman moved over to University Hospital. Dr. Edward Cockerill headed radiology at the V.A. Hospital, Dr. Vernon Vix was chief at University, and Dr. Mervyn Cohen was chief at Riley. Also on this committee were Dr. Henry Wellman, the head of nuclear medicine, and Dr. Heun Yune, who had responsibility for the resident training program. With this group of division leaders functioning as the executive committee, the chairman had an excellent departmental backing. Under Dr. Holden's direction, the department did well in the early 1990s. Financial billings were going up, and the number of faculty was increasing.



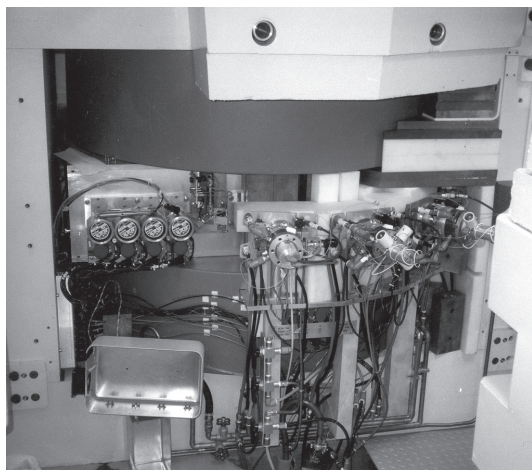
Donald Hawes, M.D.

Dr. Holden had been put in charge of developing the University Hospital space for what was then known as the high tech center. Basically, this space was designed to house the Positron Emission Tomography, or PET, scanner as well as ultrasound, CT, and MRI in an expansion of the inpatient radiology department of University.

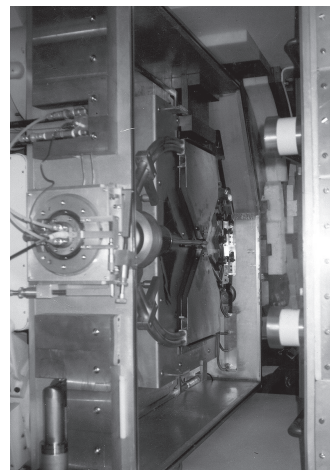


The PET scanner, funded jointly with the V.A., was the newest type of technological modality on campus. About 1988 or '89, an application had

(l-r) Henry Wellman, M.D., Nuclear Medicine Fellow Young Ha Park, M.D., and Hee-Myung Park, M.D. in 1996. Photo from Dr. Young Ha Park's collection.



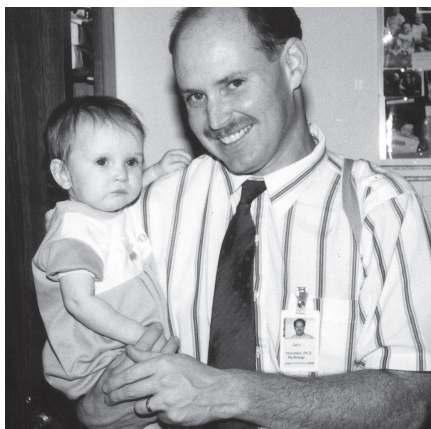
(right) Cyclotron "Dees" and ion source. (left) Cyclotron targets. Photos from Kevin Perry's collection.



been placed through the V.A. to purchase a cyclotron to produce the radioisotopes used for PET imaging. At that time, the request was not acted on, but a year later the V.A. notified the university that the project had been resurrected and that it was necessary that the entire specifications for the cyclotron and PET scanner be submitted within a matter of weeks. It was a challenge, but it all came together, and about the time Robert Holden moved into his new position as chairman, the scanner was installed.

Dr. Holden earlier had offered his help to Dr. Bruce Mock who, following a suggestion of Dr. Klatte, was considering a six-month NIH sabbatical in PET. Dr. Mock, a pharmacist, had joined the nuclear medicine faculty in the late 1970s. Before coming to I.U., he had worked with PET at the University of Chicago. The PET program on the I.U. campus started in 1992, and a physicist, Dr. Gary Hutchins, was brought in as director of the program. The third recruit was Dr. Keith Mulholland, a radiochemist.

The PET technology at I.U. went beyond nuclear medicine as it had been practiced. It actually imaged at the molecular level, allowing the scientist to measure biological processes using some of the tools of physicists and computer science to



generate that information. As Dr. Mock has explained it, nuclear medicine and PET function in biochemistry and physiology while conventional X-rays and CT basically handle anatomy and structure with an occasional flow measurement included.

Dr. Holden in 1993 brought in a young man only one year out of his fellowship to head the

Gary Hutchins, Ph.D. and his child, early 1990s.

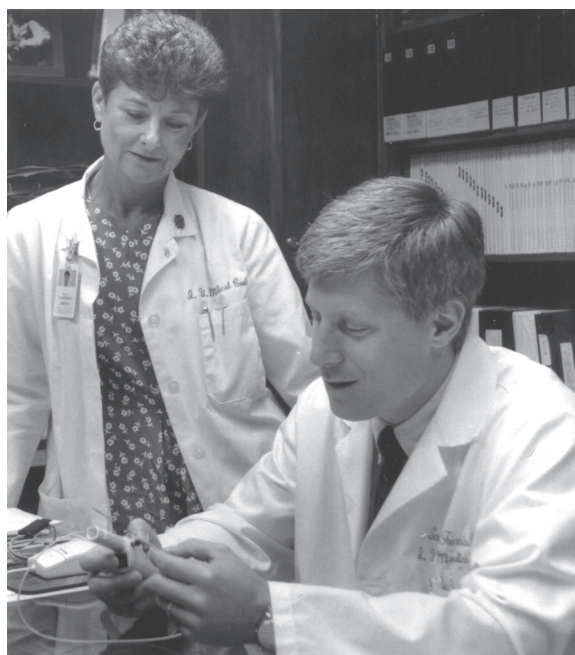
interventional section. Dr. Scott Trerotola was already aware of the good work being done in interventional radiology at I.U. In his opinion, Indiana University had probably turned out more leaders in interventional than any other institution he could name. Dr. Trerotola stayed at the university seven years. During that time he became recognized for a device he created, a mechanical thrombolytic device, known as the Arrow-Trerotola Percutaneous Thrombolytic Device, or PTD, which could be used as an alternative to surgery for dec clotting grafts in hemodialysis patients.



Scott Trerotola, M.D.

Although the PTD was invented while Dr. Trerotola was still at Johns Hopkins, the most important development work was done in his time at I.U. All of the original animal trials for safety and efficacy, for the device's intended use in dialysis grafts, were done at I.U., and clinical trials were conducted there as well as at other sites. Jerry Dreeson, an I.U. research technologist, worked with him. Dr. Trerotola is justifiably proud to have invented the leading mechanical thrombolytic device in the U. S. The device is simple and self contained and has proved safe and effective. It is inserted into the vein; then it opens up and spins, breaking up the clot.

Recognizing the possibilities which technology offered, in the early 1990s the department began to move in new directions. A committee named to review the department's computing needs recommended an upgrading of the computer system. The decision was made to go one step beyond that and set up a network connecting the different campus locations, including the four hospitals and the Clinical Building. Networking served a clear purpose. It furnished the staff and faculty with a common set of software tools and work stations, and it provided them with a much better means of communicating with one another.



Scott Trerotola, M.D., explains the PTD to Penny Hood, R.N., B.S.N. The PTD received FDA approval on July 31, 1997. The invention earned Trerotola international recognition as an authority on dec clotting of hemodialysis grafts. Photo from IUSOM, Department of Radiology Images, Fall 1997.

The new PACS project was launched in 1994, a soft copy review system known as Picture Archiving and Communication System. The I.U. PACS project is one of the largest in the country. To implement PACS, the Department of Radiology entered into an agreement with the Medical Center and University Hospital and Wishard Hospital. This called for an upgrading of the computer network for both office and medical modality computers in order to deal more efficiently with the great amount of data being generated.

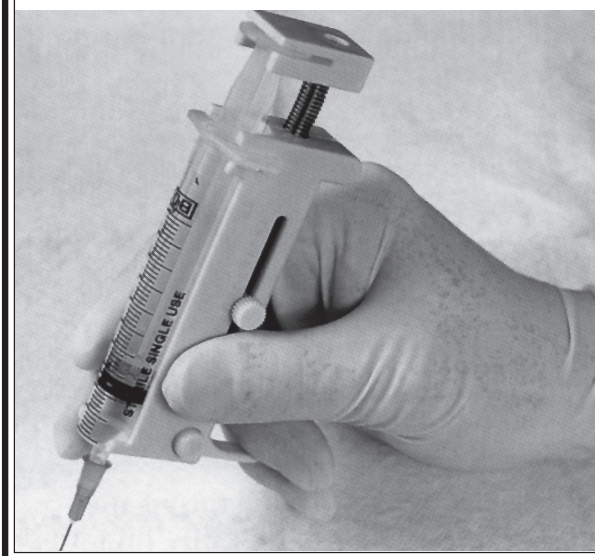
In the years since, radiologists have progressed from traditional X-rays taken on plates and developed on film to a somewhat filmless environment where X-rays are then projected digitally on a television monitor. These images can be sent to any of the hospital's wards and service areas. No longer is there a wait for a film to be processed and then delivered. Early I.U. radiologists could never have imagined a department without film. But today Wishard, the V.A., Riley, and University hospitals are very near that goal. Digital radiography, or computed radiology, permits X-rays to be sent anywhere in the hospital or almost anywhere in the state.

The installation of a new computer network has involved the installation of hardware in medical image storage, medical image review, and interfaces to the various hospital and radiology information systems in the hospitals involved. The film file room with its

During his time at Indiana University, Liang-Che Tao, M.D., Professor Emeritus of Pathology and Honorary Professor of Radiology, worked to expand the capabilities of fine needle aspiration (FNA). Tao pioneered techniques of FNA cytology of non-palpable space occupying lesions, particularly of the thorax and abdomen. He worked to make deep aspiration of these sites feasible and practical for clinical use through the establishment and summarization of the cytologic criteria necessary to make accurate diagnoses for transthoracic and transabdominal aspirates.

An inventor at heart, Dr. Tao was dissatisfied with the conventional 'pistol-grip' syringe holding devices available. Not only were the syringes clumsy to use but they demanded a substantial period of time to learn the technique, they were also intimidating to the patients because of their size. Over time, he developed a much smaller 'pencil-grip' syringe holder with user-friendly features, such as automatic suction, which would greatly improve biopsy results. This useful tool also allows the radiologists to hold the transducer in one hand and perform FNAB with his/her other hand.

In 1997, he decided to patent the idea after consulting with the Dean of Medicine. Today the Tao Aspirator is being used in clinical settings by Pathologists, Endocrinologists, Surgeons and Radiologists.



stacks of heavy envelopes stuffed with X-ray films will soon be an outdated concept. In the future, all of that information will be obtainable electronically. This easy accessibility allows referring physicians to examine X-ray studies on the computer screen and make comparisons with the patient's earlier films. Another advantage with the digital computer is that, using what is called "windowing," the image can be manipulated to enhance black and white, to pull up a particular detail for closer study, and to magnify an area of interest. Ultimately, with this technology, data can be managed much more efficiently. A report can be sent electronically to the referring physician. Most of the paper work can be eliminated.

For a number of years while he was at Riley, Dr. Cohen had championed the need for developing information systems and for gaining the technical skills required for transmitting X-ray images and reports electronically to referring physicians. Digital films, the so-called soft films, were envisioned at I.U. as early as the 1980s by Dr. Cohen and others at Riley when the new department opened there. After consultations with vendors, they acquired a digital fluoroscopic unit in 1985 from the Fisher Company in which routine fluoroscopic studies could be done completely without film. This room also had a C-arm on a 90-degree tilt table, making it possible to do angiography and interventional procedures as well. At the same time, working with General Electric, Dr. Cohen was able to get another digital fluoroscopic unit. Four years before GE perfected a commercial product, I.U. had the only GE fluoroscopic unit in the world. Then, this was upgraded and a second GE room installed.

The Riley department had purchased the Fuji computed radiography system, marketed by Philips in 1985. This system using a phosphor plate allowed routine radiographic images to be obtained in a digital format. With continual upgrading, this equipment lasted until 1999. I.U.'s radiology department in the late 1980s was one of the first in the United States to provide a digital imaging network to intensive care units. This mini PACS provided for about two to four weeks of local storage of images on each work station in each ICU area. Riley Hospital was then a research and development site for 3M, which had developed a laser camera which could, at that time, take input for only a single modality. The Medical Center was the first site to have the multi-modality camera, which now has become common.

Another significant change for the department came about when radiology services were extended beyond Marion County. The I.U. radiology department in 1994 gained an off-campus site when it contracted with Johnson Memorial Hospital at Franklin, Indiana, to manage the radiology section there. When that hospital



Richard Buck, M.D., 2004



Tariq Hameed, M.D., 2004



H. Richard Parvey, M.D., 2004



Dewey Conces, M.D.

sent out a request to interested central Indiana hospitals, I.U. Radiology submitted a proposal and won the contract. Dr. Holden was responsible for establishing this off-campus partnership. Dr. Justin Wass was put in charge, arriving there on April 11. He spent his mornings there and his afternoons in abdominal imaging at University Hospital. A full-time radiologist, Dr. Richard Buck, was hired, too. Dr. Wass is still there half time as is Dr. Tariq Hameed. Dr. H. Richard Parvey is full time.

The department recognized this connection with an outlying hospital as an opportunity to provide Johnson Memorial with access to subspecialty radiology such as neuro and musculoskeletal which it otherwise would not have. And as a benefit to the university, it would provide a larger patient base for radiology residents to gain experience. There they would be working in a hospital setting wholly different from the academic. One resident would be sent there per rotation. For the most part Johnson Memorial is a private practice situation and, because most residents would be going into private practice on completion of their residencies, their experience at this hospital would be valuable.

This arrangement with the Johnson Memorial Hospital has proved to be a successful partnership, and over the years, the volume of patient care has increased. Funding to the university from this off-campus clinical care has meant additional resources to support the I.U. residency program and research projects. Neuroradiology digital imaging and musculoskeletal MR exams can be sent electronically to I. U. to be read. The mammography done in Johnson County is sent to the Medical Center by courier. Every other type of X-ray is read there. For the radiologists working at Johnson Memorial there is the capability of digitalizing any image and sending it up to the university to get a consultation from a subspecialist.

Because this arrangement between hospitals worked so well, a similar connection was made with Bedford Regional Hospital in the small town of Bedford, some 80 miles south of Indianapolis. The Medical Center's radiology department assumed

responsibility for providing imaging support for the Bedford hospital. The objective of this new initiative, like that of Johnson Memorial, was to explore the value that a large subspecialty group could bring to the radiology services of a small community hospital. This started in 1999 with Dr. Richard Buck in charge. After Dr. Buck returned to Indianapolis in 2001, recruitment of radiologists for Bedford became a significant challenge. By late 2002 there was no longer an I.U. radiologist onsite providing coverage and by early 2003 I.U. radiology's formal relationship with the hospital ended.

A key event of the decade was the creation of Clarian Health Partners, Inc., the union of University and Riley Hospitals with Methodist Hospital, which was finalized on January 1, 1997. This merger resulted in a \$1.1 billion not-for-profit health care system, which is owned and operated by Clarian. To combine the management of a private hospital with that of a university system called for a number of adjustments. Despite some dire predictions from the public at the time the consolidation was announced, Clarian has survived, but still it faces the challenges of fully integrating academic and private cultures.

In many respects, the creation of Clarian Health Partners has been extremely successful. The administration was able to consolidate quickly many services into single departments. These predominantly supported infrastructure and included such services as dietetics, pharmacy, marketing, information technology, nursing, human resources, and all top-level administrative functions.

At the time Clarian was formed, Methodist Hospital was served by a private practice group called Radiology Specialists of Indiana (RSI) and University and Riley Hospitals were served by Indiana University Radiology Associates (IURA). These two groups soon were able to unite the administrative functions of radiology. Vaughn England from Methodist Hospital was appointed as the first administrative director. A council of the medical directors from University Hospital, Riley Hospital, Methodist Hospital, and the Methodist Beltway sites appointed Gene Van Hove from RSI as the first medical director of Clarian radiology. After serving for approximately three years, Dr. Van Hove was replaced as medical director by Dr. Dewey Conces from IURA. This group has successfully run the technical/administrative functions of the radiology departments within the Clarian hospitals.

It has been much more difficult, however, to bring together the two professional radiology groups. Discussions focused on merging the two radiology groups began in 1995 and by 1996 had increased in intensity with a team of four radiologists and one administrator from each of RSI and IURA meeting regularly. Both sides saw the advantages of creating a single professional radiology group within Clarian. This is

the national model. Virtually none of the five thousand hospitals in the United States has more than a single radiology professional group.

By the end of 1998, the two groups had agreed to merge, creating an organization called ImagineX. An operating board was established and started to meet. Unfortunately, just prior to the finalization of the legal documents to create the merger, threats from the neurosurgery group at Methodist Hospital to withdraw from the hospital resulted in the division of RSI with two neuroradiologists from that group joining neurosurgery. This fragmentation and division of radiology was unacceptable to IURA, and the merger was not consummated. At that time both groups struggled to come together without success.

The creation of Clarian required the merging of all residency programs under the School of Medicine. For many years, Methodist Hospital had run a successful radiology residency program. This was slowly merged over four years into the I.U. Department of Radiology's residency program. The 1999 residency class entered as one group, based at both Methodist and the Medical Center. Valerie Jackson from I.U. continued as the residency director with Dr. Gonzolo Chua from Methodist appointed as her deputy. The residency program is now administered entirely by the School of Medicine, with the residents as employees of the school, not of the hospitals. With the programs combined, there have been 15 to 17 residency positions each year, making the I.U. radiology residency program the second largest in the United States. In fact, in 2002, the program became the largest in the United States with 68 residents. Most residents choose to take a one-year fellowship in a radiology subspecialty, and the department offers about 17 fellowships each year to residents who are eligible.

Wishard Hospital was not brought into the Clarian merger. There was concern on Wishard's part about its future since it had been under I.U. management for 11 years. The university, however, assured the people at Wishard Hospital that the commitment would not change. The Veterans Administration Hospital, of course, being federally owned, was not affected by the creation of Clarian.

In 1995, when Dr. Holden became dean of the School of Medicine, Dr. Mervyn Cohen assumed the chairmanship of the Department of Radiology. Dr. Cohen, who had come as a fellow in 1979, by now had 15 years of experience in the department, the greatest part of that in charge of radiology at Riley. Initially, Dr. Cohen indicated no interest in becoming department chairman when Dr. Holden resigned to become dean. Then, at the time that he moved into that position, Dr. Holden named Dr. Cohen acting chairman of radiology.

The
Cohen
Years

1995-2002



Although Dr. Mervyn Cohen made clear that he had no intention of applying for the chairmanship, others encouraged him to consider it, recognizing not only his strong organizational capabilities but also his outstanding work at Riley. The fact that he was well liked and respected would prove to be an asset to his management. This came at the time that Clarian Health Partners was being formed, and the radiology departments of Methodist Hospital and University Hospital were being integrated. Dr. Cohen then agreed to become chairman.



Mervyn D. Cohen, M.B., Ch.B., M.D.

Energetic and well-organized, Dr. Cohen proved a good choice. He demonstrated his willingness to try new methods and new ways of thinking. A risk taker, he realized that a risk is often valid if the end results justify it. While Dr. Cohen felt the department had done very well over the previous 25 years with the leadership of Dr. Klatte and then Dr. Holden, he recognized from the outset there was a need for a different approach, an approach more in line with the world of business. A consultant was brought in who, in the next three years, actively helped reshape the radiology department. This redesigning not only called for a change in organization but also a change in the thinking of the department leadership.

One of the most important steps taken by Dr. Cohen in this new kind of management was to empower the radiology faculty and to get them more involved in determining future goals and solutions for the department. Nearly half of the faculty went on a week's retreat at Crotonville, a training center owned by General Electric. Neither radiology nor health care came under discussion during the entire week. Instead, a business school dean talked with them about becoming more business oriented. One significant outcome of this retreat was a recognition that the department's focus needed to incorporate three separate businesses: teaching, research, and clinical work. The next step would be to fix the department initiative on a new vision for the future rather than on the traditional thinking of the past.

Earlier in its history the department's retreats had been less structured, concentrating chiefly on current concerns with some attention given, too, to future plans. Now, Dr. Cohen's retreats adopted a business approach, which called for a strong focus on the future, on vision and mission and strategic initiatives for the department. After nearly six months of work and after many revisions, a departmental mission and vision statement emerged, defining the principles and the culture by which department members wanted to act. This statement reflected the department's

goals for achieving excellence in clinical care, teaching, and research, and a fourth area, service to the university and the profession. Dr. Cohen believed that the academic mission should extend beyond the department and the medical school.

The new mission and vision statement created by the department clearly outlined how the department would function in the future. The aim was to be one of the leading radiology departments in the nation. This required that the department achieve excellence in all of its functions — teaching, research, clinical activities, and service. It required that the faculty retain existing values such as respect, collaboration, mutual trust, but that it change the manner in which it operated. No longer would all faculty be expected to contribute equally across these activities.

The three areas now to be considered as separate businesses had always been in place in academic radiology. For various reasons, at I.U. over the years teaching and clinical work had commanded more attention than research. The educational and clinical aspects were considered the primary functions of academic radiology. Also, a lack of funding for research and an understaffed department had caused this area of radiology to be a less structured part of the department's work. Research had been considered more an individual practice based on the radiologists' interest and available time. For the most part, it was clinical research, something generated in the radiologists' clinical work and limited primarily to the use of the modality available. Academic, tenure-track radiologists, however, did feel an obligation to involve themselves at some level of research just as they recognized a need to publish articles and give lectures, often seeing these also as measurements of their achievement and success in their chosen academic field.

It was recognized that faculty with 10 or 15 percent of time devoted to academic endeavors could not achieve national success and recognition. It was decided to change the structure so that a core of faculty would devote time to specific activities, enabling the department to become very successful in each of these. Thus, it was determined that between six and 10 radiologists would need to devote between 40 and 60 percent of their time to research endeavors. This was a significant change from the traditional departmental structure.

Similarly, it was seen that some radiologists could and should devote significant time to teaching and service endeavors. A clinical track was created to make a welcome home to faculty who wished to devote most of their time to clinical work and teaching but that had no significant interest in research. Previously, these individuals on tenure track had been required to do research. Teaching contributions and strong clinical commitment were found to be equally valuable to the department and equally essential to the department's long-term success. The changes outlined in the mission and vision statement in 1996 have been largely implemented.

An outstanding, patient-oriented clinical service certainly was imperative if the department was to remain strong in its teaching mission for medical students and residents. This clinical work, in turn, allowed high-quality, focused research to be conducted with resources dedicated to selected areas. The department's investment in special equipment, such as that in the new MRI research facility, testified to the importance being given to research in the new Cohen era.

It was readily apparent that with an emphasis being placed on basic science research, it would be necessary to draw in people specifically skilled in research. Setting for itself a goal to become nationally recognized as a leader in basic research, the Department of Radiology then began building programs and enlisting personnel specifically trained in academic research. In recent years, a number of Ph.D. scientists have been brought into the radiology department. Many of these are seasoned researchers who have brought external funding with them.

A really great difference had come about with the PET program initiated in 1992, a program combining research with clinical work, which had been launched in conjunction with the Veterans Administration and the costs shared. In 1994, when the Research Investment Fund awarded about \$1.2 million to help build the research program with PET, the department was then able to use that money to further its own resources and to bring in many investigators from throughout the campus to join in the work. In Dr. Cohen's chairmanship, the search for outside funding became more imperative in order to achieve department goals.

Dr. Gary Hutchins came on as director of the PET program in 1992. Since then, he has succeeded Dr. Kruger as head of the Division of Imaging Sciences and was named Dr. Cohen's vice chairman of research. Seed money for the research program with PET came from RIF and from an investment by IURA. The Research Investment Fund, or RIF as it came to be known, is an I.U. program through which excess funds coming in with NIH grants are redistributed to aid the growth of research at the university.

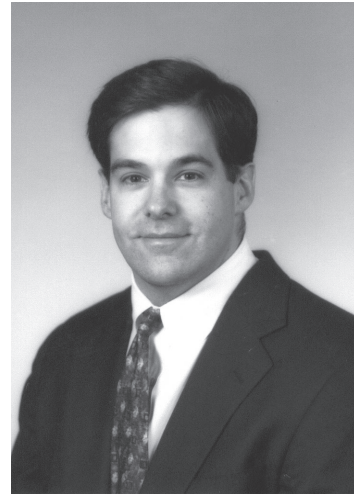
Dr. Hutchins was encouraged by the chairman of this fund to put together a proposal for imaging research. He did this, working with persons in many Indiana University Purdue University Indianapolis (IUPUI) departments and the School of Medicine. This division centering on basic science research was created by a pulling together of all the Ph.D. scientists in the department in various locations. Then an effort was made to recruit new people. This group of scientists within the department are physicists and chemists who support the imaging modalities. Some work with PET imaging; others are involved with CT and MRI.

After the departmental retreat decision to favor a stronger emphasis on research and focus on specific areas of research, it was decided to promote major support for three research areas rather than stretch the funding with multiple research projects. One chosen area was functional imaging with a study of biology, biochemistry, and physiology rather than anatomy. A second was interventional procedures, significantly involving the interventional radiology section. The third was Informatics. This included research into health services, looking basically at the effectiveness of the procedures and the utilization of these procedures in radiology.

Dr. Mark Lowe, an MR physicist, helped the growth of the brain imaging program. Dr. Micheal Phillips and Dr. Joseph Lurito were productive in the functional MRI area. Dr. J. Shannon Swan, a radiologist, headed health services research, and Dr. Gordon McLennan, an interventional radiologist, continues to be active serving as the Director of the Interventional Radiology Research laboratory.

It is important that the radiology department's research be fixed on basic science and that it be clinically relevant so that it can be translated into the clinical setting. The department's objective is to translate that very strong basic research component in such a way that the basic work being done ultimately would become part of the clinical. Then, radiology would evaluate with its health services the effectiveness of those clinical procedures as they are implemented. In this way, the basic scientists and the radiologists are integrated. With everyone working together, all of them would have input on the basic level as well as on the clinical.

A number of research programs are now growing as imaging cores for investigations throughout the campus, even throughout the state. While these programs have come out of radiology, they now involve many other people. An NIH National Cancer Institute grant was a planning grant. It provided funding to help develop an imaging center emphasizing the study of physiological and biochemical processes as they relate to cancer. That



Micheal Phillips, M.D.



Joseph Lurito, M.D.



J. Shannon Swan, M.D.

fund was then leveraged with a State of Indiana 21st Century Fund, and a grant was awarded to develop the Indiana Center of Excellence in Biochemical Imaging.

The first grant furnished about \$1.5 million. Another \$2 million came from the 21st Century Fund. As a result, the division was permitted to become part of the Genomics Initiative funded by the Lilly Foundation. That \$105 million award to the I.U. School of Medicine provided the radiology department with a \$9 million component. All of this available funding has enabled radiology to begin building a very significant research infrastructure for use not only by the radiology faculty but also as a resource across the campus and the state.

Indiana University Radiology Associates, Inc., was very supportive of Dr. Cohen's efforts to upgrade and expand the department. In addition to moneys brought in from outside sources, the professional group of the radiology department contributed nearly \$10 million and the School of Medicine faculty about \$5 million. This new funding allowed the department to build its programs with a very significant growth base. New positions were filled for faculty, technologists, and support staff and the most modern imaging equipment acquired in order to image both human beings and laboratory animals.

According to former director of the MRI research facility, Dr. Mark Lowe, "the higher the Tesla the better the visualization of fine structures in the brain." With advanced technology, the university has a decided advantage among academic centers in line for grants, particularly so as the Department of Radiology becomes more involved in neuro imaging research. Doctors interested in these grants need extra time for research beyond their teaching and reading of films.

An important part of having a successful research program is to have a very strong infrastructure to support the research. Under the leadership of Dr. Hutchins, the department now has strong research support. It employs research nurses, a statistician, many lab technicians, people to support grant applications and management of the finances of grants, as well as a manuscript writer.

During the past several years, the administrative structure of the department has changed significantly. While the previous chairmen may have been considered authoritarian operating with significant centralized authority, Dr. Cohen believed strongly in the principle-based method of leadership with distribution of authority. Historically, most decisions came from the chairman's office with occasional meetings of the IURA board, which was comprised of the geographic directors of each of the four hospitals, the chairman, and the residency director. Dr. Cohen introduced a mechanism of having elected members on the IURA board.

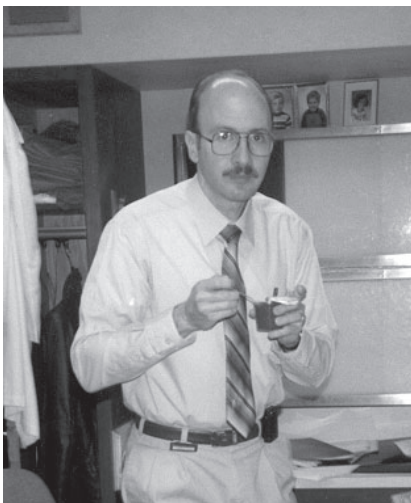


(l-r) Mahmoud, an observer; Kenneth Buckwalter, M.D.; fellow Georgia Dorulla, M.D.; resident Daniel Krejchi, M.D.; and a medical student in the musculoskeletal reading room, 1997.

Empowering the faculty in this new kind of business management was one of the most important of Dr. Cohen's first steps as chairman. Not only did he have vision, but he also had

expectations. He saw the bigger scheme and the planning it involved, but he was willing to delegate to others and to provide them with the resources necessary to accomplish the tasks assigned to them. Dr. Cohen then named vice chairmen to be responsible for the three key divisions of the radiology department: Dr. Gary Hutchins in charge of research, Dr. Richard Gunderman in charge of education, and Dr. Donald Hawes heading the clinical work. Previously, the department had not had any vice chairmen. The appointment of Dr. Hutchins to head research was most unusual, making I.U. one of the very few departments to have a Ph.D., rather than an M.D., leading research.

A new executive committee was created to run the day-to-day operations of the department. The membership of this committee was the department chairman, three vice chairmen; the director of Informatics; the administration director, Michael La Masters; and two elected members. Dr. Kenyon Kopecky and Dr. Kenneth Buckwalter were the first two elected members.



Under Dr. Cohen, the executive committee met every two weeks. Since the IURA board was no longer identical with the department's executive committee, Ph.D. physicians were included. The minutes of these meetings were published and made available to all of the faculty. The entire radiology faculty met once or twice a year to talk about department management and finances. The reimbursement philosophy of Dr. Klatte continued with Dr. Holden and Dr. Cohen: equal treatment was given to all faculty members. Teaching, research, and

Kenyon Kopecky, M.D., 1993

clinical time had equal value. Equal pay was given to those who served for four or five years. This policy was much more open than that of many academic departments.

Many other changes have been made to the departmental organization structure and support infrastructure. As administrator of IURA, Michael La Masters performed a number of roles for many years until his retirement in 2002.



(l-r) Dawn Molnar and Linda Lynch, 2001.

Thomas Gibbs replaced him as administrative director of IURA. The department has other strong personnel. Under the leadership of Dave Hennon, the computer division provides outstanding computer support to the department. The computer system has significantly eased the day-to-day activities of the faculty who have access to a network on which all of their information is stored. They can access this from work or home or while traveling.

The accounting section is under the leadership of Linda Lynch. Dawn Molnar joined her in 1997. They introduced the latest computer accounting software and, working together with Michael La Masters, provided a significant new amount of management information. In the late 1990s, the department, working with Deloit & Toiche, undertook a very detailed activity-based cost analysis, helping to develop a clear understanding of the relative expenses of the teaching, research, and clinical businesses of the department. La Masters, working together with Theresa Lin, greatly strengthened information regarding departmental billing and began a small internal billing system within the department.

At that time, the department also explored utilization of a “balanced score card,” working together with the consulting firm of Grant Thornton. This helped with strategic planning and allowed faculty to consider implementation of strategic initiatives which aligned with the department’s mission and vision statement. All departmental faculty now undergo annual reviews. Department leaders are required to submit annual reports analyzing activity over the previous year and putting forward strategic initiatives for the coming year.

Within the department, there has been strong focus on development of leadership. In the early 1990s, the department had geographic directors of radiology at each of the four hospitals. The ever-growing emphasis on subspecialties called into question this geographic concept. Apart from nuclear medicine and, to a lesser extent, angio, pediatrics, and neuro, there was no strong horizontal section structure. During the

mid- and late 1990s, Dr. Cohen created a new leadership plan for the developing and implementing a horizontal section structure with section chiefs clearly identified for each of the radiology subspecialties.

Each section chief had responsibility for delivering services related to that section across all of the geographic sites of departmental activities. It was exciting that many of the leadership positions in the department were now filled by young faculty. Many on faculty have taken the opportunity to attend leadership development courses and also courses in the business aspects of radiology. In 2002, it was decided to divide the functions of the clinical vice-chairman in the department. When Dr. Hawes stepped down from this position, it was divided into two positions: a vice-chairman of clinical operations, held by Dr. Joshua Farber, and a vice-chairman of clinical technology, held by Dr. Buckwalter.

Many faculty members made valuable contributions serving on departmental committees. There were between 15 and 20 committees in the department at that time. This was seen as necessary to ensure smooth operations. One committee started several years ago is the tenure and promotions committee under the direction of Dr. John Lappas. Previously, this function had been performed from the chairman's office together with the executive committee.

Although much attention was being given to the success of research programs, education was by no means being neglected. The academic side of radiology had always held a high priority in the department. In line with his business-oriented commitment, Dr. Cohen decided to renew all facets of the department's education program. The whole process came under scrutiny – curriculum, teaching methods, achievements, evaluations.

A new Division of Education was created, and the decision was made to allocate departmental resources for developing special expertise in education. In 2000, Dr. Kenneth Williamson, a Ph.D. in educational psychology, was brought in along with Ronald Fraley, who had served as the director of allied health training for the US Navy. In 2001, Jennifer Steele who has a Master's degree in adult education, brought the talents of an extensive educational and business background to the division. From that starting point numerous educational projects have evolved. A key focus has been evaluation, a closer look at methods being used and the possibility of doing them better. One result has been an improved system for residents to evaluate faculty and for faculty to evaluate residents. Research has been done on how radiologists learn to report studies. A large ongoing project deals with perceptual classification, how radiologists learn to classify different imaging findings.

There are many other projects including a growing program of educational research and publication. At a 2002 meeting of the American Roentgen Ray Society, I.U.'s radiology department presented many more abstracts than any other academic radiology department. At the end of 2002, the department was outpublishing any other academic department in educational publications.

The radiology department has built up a strong library system, spending nearly \$100,000 per year on books and other educational support materials. Willi Gurka has for many years directed the library program. Since the mid-1980s, the collection has been classified by three categories: library books which are used for reference only, loaner books which may be signed out by residents, and service books which are available in the reading rooms for immediate utilization during reporting. This system has worked well. Each of the hospitals, too, has a reference library in its radiology department. Books are easily tracked because of a unique coding system introduced in the mid-1980s. They are classified into major anatomical areas of interest using the American College of Radiology coding system. Within each category, books are then numbered sequentially at the time of their purchase.

In addition to the traditional lectures and apprenticeship methods of teaching medical students, new programs are being developed improving the quality of electronic learning. To help people learn about radiology using computer resources, the education division recruited Dr. Mark Frank. A chest radiologist, he designed much of the software for a well-known radiology web site known as AuntMinnie.com. Some of that software is being used to develop new programs that enable faculty members to create online teaching files to assist in the instruction of medical students and residents.

One indication of the success of radiology education is that it attracts more students into radiology than any other medical school department. For the past several years, numerous I.U. medical students have chosen to go into radiology. Since I.U.'s residency program accepts only 15 to 17 people, and no more than half of them from Indiana, the majority will need to go out of state for their radiology residencies.

Every Indiana University School of Medicine graduate who completes four years of study on the Indianapolis campus receives about 168 hours of dedicated

Richard Gunderman, M.D., Ph.D. and medical student education coordinator Ruth Patterson, 2001.

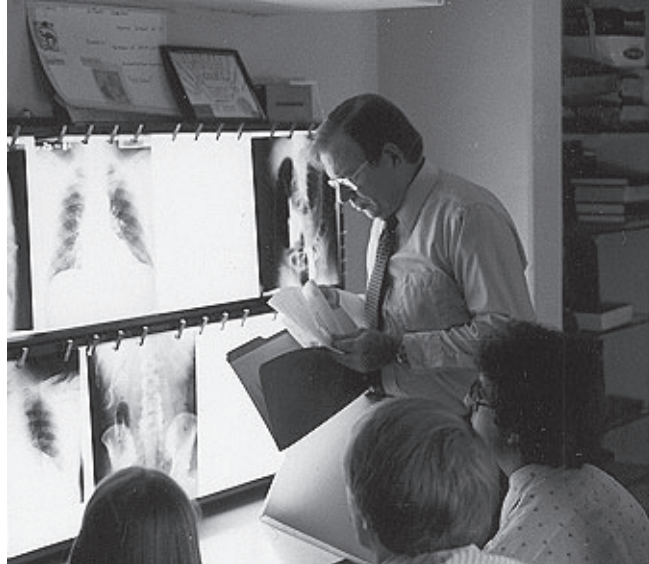


The Cohen Years

Glenn Moak, M.D. and senior medical students examine x-rays at the VA Hospital in November, 1981. From Dr. Margaret Olson's collection.

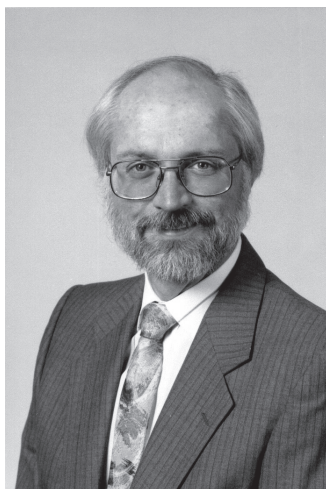
"But this is the thing. I loved the students. They were energetic. As I say, I was blessed to have smart people. I don't say this very often to other teachers. I know them in regular life. I don't like them to know what I was teaching because it would only cause envy in them. I didn't have to go through discipline problems, roll taking. They all showed up. To my memory, I never knew anyone that didn't show up who was on the list. I never took roll, but they were always there. And this was a wonderful feeling for me."

- Glenn Moak, M.D.



radiology instruction, including some work in anatomy, the second-year Introduction to Clinical Medicine course, and the fourth-year clerkship. Considering the number of graduates in I.U.'s medical school, the second largest in the country, that means many doctors are being graduated with a very good understanding of radiology. That bodes well for the future of medicine.

Dr. Aslam Siddiqui is the medical student clerkship director, a position he has held for several years. Another valuable person in the educational division is Ruth Patterson, the coordinator of medical education. The department was voted by the graduating medical students as the outstanding clerkship at I.U. in 2001 and 2002. This is not surprising in view of the number of Golden Apple awards for best teacher in the medical school won, first by Glenn Moak and, later, by Stan Alexander, who received a total of six Golden Apples and the only Platinum Apple ever awarded.



Stanley Alexander, M.D.

With Dr. Alexander's move to private practice in Florida in 2002, changes were called for. A new special program of education mini-fellowships for I.U. residents was set up, enabling them to spend three months of their residency working on special educational projects.

I.U.'s residency program has not been static. It has gone from a three-year program to four, then to five, then back to a four-year training period. With I.U., as with similar programs in other teaching hospitals in the U.S., the length of the residency and the techniques of recruiting often are determined by economics and by what other medical schools are doing. Competition plays a big part.

In the 1970s, I.U. offered a four-year residency without a prior internship. Later, a fifth year was added, a required one-year fellowship. In 1994, in compliance with requirements of the American Board of Radiology, the department determined to accept only those applicants who had completed an internship with one year of ward experience. The required fellowship was dropped, and the four-year program was again in force. In 1994, Dr. Valerie Jackson was appointed residency program director, succeeding Dr. Yune when he retired. He had been director of residency training since 1985.

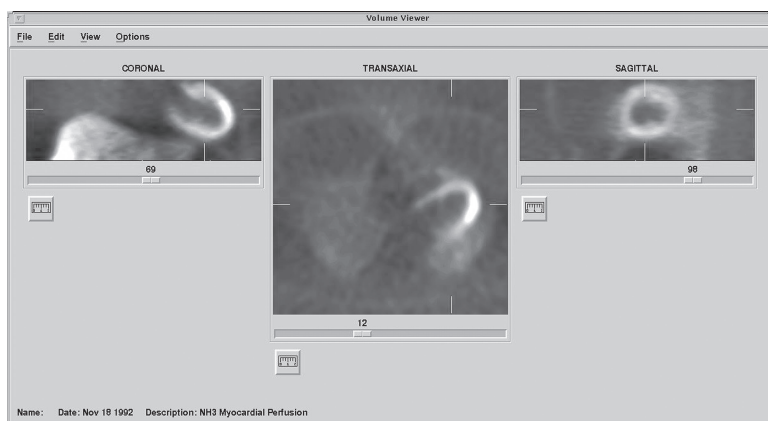
The recruiting of residents became more difficult in the early 1990s. When the job market tightened and fewer medical students were applying for residencies, the whole recruiting process at the Medical Center was given a second look, and some modifications were made. At one time, every faculty member in the department was involved as an interviewer. When applicants arrived on campus, they were moved about to various sites on campus for their interviews by faculty physicians. Often, these doctors would be on duty and not immediately available, and applicants would sit and wait.

The structure of the interview process changed when Dr. Holden became chairman. Under a new plan, only certain days of the week were set for interviewing. Extra effort was made to attract applicants and to welcome them to campus. Applicants came first to a general meeting where they were introduced to the I.U. radiology program with a slide presentation. The number of faculty scheduled for interviews per day was reduced to about seven or eight. Later in the 1990s, in Dr. Cohen's chairmanship, the recruiting process became even more a matter of marketing to attract top applicants. Later each applicant met with Dr. Cohen and Dr. Jackson and two other faculty members assigned to interview that day, four one-to-one meetings.



Lois Shuman

Today's residency applicants are given campus tours. At first, when applicants were being interviewed in the different campus buildings, Lois Shuman, the residency education coordinator, would accompany them to the interviews and then later try to fit in a tour of the campus. When the change came to have interviews conducted in the mornings at one place, current residents were asked to take the visitors on afternoon Medical Center tours. Later, this idea was expanded. To introduce applicants to the city of Indianapolis as well as to the medical campus, a group of residents is delegated to take them out to dinner the night



The first PET study in Indiana.

before the interviews at department expense. These residents enjoy having a role in the recruiting process, and the visitors are appreciative.

In a competitive field, I.U. has found that marketing techniques work well. Residency

recruitment has always been important in the department's concern for academic excellence. The I.U. residency program, because of its academic reputation, attracts excellent candidates, and new faculty, both from the outside and from the residency program, are attracted by the department's strong emphasis on education. For the 2001-2002 year 16 residents were accepted, one more than the usual 15 because the United States has a shortage of radiologists, particularly academic radiologists.

Programs have been developed which give residents at I.U. experience in academic radiology, exposing them to research, teaching, and clinical service while they are residents. Dr. Jackson continues to direct the residency program with Dr. Robert Tarver as the associate director. Lois Shuman provides outstanding service to the residents, all of whom have come to rely on her support and advice. Also, she speaks around the country on a range of topics, from dealing with stress to software management. A long-time member of the department, her initial assignment was to serve as Dr. Klatte's secretary. She holds the unique distinction of being the first human to have a PET study in Indiana.

After more than a decade, the technologists' school, the Radiologic Sciences Program, in 2002 again came under the management of the Department of Radiology. With Allied Health now responsible only for graduate school programs, all of the undergraduate programs returned to their clinical departments. The first graduates of radiology's technologist program earned a one-year X-ray certificate. Later, only degree students were admitted to the school, electing to earn an associate of science degree in radiologic technology or a bachelor of science degree in either nuclear medicine technology or medical imaging technology.

In 1999 IURA purchased a building at 714 North Senate as an off-campus site providing additional space for teaching and research. The Education & Research Institute (ERI) building is an excellent example of the radiology department's investment in educational programs. Located on the downtown canal west of Senate

Indiana University Education & Research Institute building.

Avenue, it is near the Medical Center but not a part of it. The department's Division of Education is based there along with affiliated research and development programs. Some space is rented to other tenants from the university.



It is an interesting coincidence that academic radiology is once again located on Senate Avenue in Indianapolis, just a few blocks north of where the Indiana University affiliate school was located nearly 100 years ago and the clinic where Dr. Lindenmuth taught early medical students about X-rays.

The ERI building was purchased in order to provide a home for many of the department's support infrastructure services. Financial services, networking, and PACS initiatives have been moved to this building. The building also houses the Division of Informatics and the Division of Health Services Research programs and currently serves as a base for all of the educational development and research programs. It also was intended to provide a home for educational programs developed in conjunction with corporate partners such as Philips Medical Systems and GE Medical Systems. The location on the downtown Indianapolis canal provides an attractive environment for educational courses offered to out-of-town students. There is space between the building and the canal for future growth, and the department has also purchased additional land to the north and west of the building to allow for further expansion that is currently used for additional parking.

The department's Informatics division concentrates on the research and development of state-of-the-art radiology systems. Rapid changes in radiology call for the enhancement of information systems which will improve the health care process. Computer technology allows data to be received, cataloged, and stored so that it can be immediately available to anyone in the system who needs it. This division was involved in developing a natural language process which could lead to conveying information by means of technology and eliminating much of the paper reporting done by radiologists. It was also thought that these information techniques would be able to abstract basic information automatically from radiology reports for billing purposes, research, and reports made to doctors.

Another focus of this division was the development of important browser-centric, web-enabled systems which could decrease development and deployment costs and also reduce training time and costs. An Informatics division was unique in academic radiology departments. Although many other radiology departments share this interest, I.U. was in the forefront with the creation of this special division. The person chosen to lead the new division was Dr. Patrick Jamieson, who came to the Medical Center from private industry. In July 2002, Dr. Jamieson decided to leave the department and center solely on his own research interest in natural language processing and developed his own company called Medical Reporting Solutions. He still continues to work in the ERI building in close collaboration with members of the radiology department.

Another step toward the future for radiology at I.U. has come with the formation of the GE REWARDS Institute within the Department of Radiology. REWARDS is an acronym for Radiology Enterprise-Wide Archival Retrieval and Distribution System. Located in the department's ERI building, this new institute assists hospitals in their shift from film to digital imaging through research and training programs. Partners in this endeavor are the I.U. Department of Radiology, IURA, and GE Medical Systems (GE).

The REWARDS Institute supports a research program, a customer learning center, and a site for demonstrating the GE Picture Archiving and Communications System (PACS). The purpose is to develop image management and education and training programs as well as an imaging center show site for hospital executives and administrators and physicians, technologists, and other health care personnel. The aim is to improve clinical radiology productivity and work flow as well as improve the quality of health care. REWARDS is also funded for research projects which relate to behavioral and technical aspects of radiology information technology, application of PACS, and process improvements. Lori Rumreich was ideally suited to lead the new REWARDS Institute with a strong background of health care, working with Roche in marketing, product-developed and education programs.

This joint venture with GE was valuable to the radiology department at I.U., not only because of its innovative digital product line but also because of GE's emphasis on customer education and its responsiveness to customer needs. Although the radiology department has for a number of years worked with manufacturers and vendors in providing a site for testing new equipment, this new alliance with GE takes a different approach altogether. It is a joint venture which promises to bring about many benefits for both the radiology department and the medical school.

Another interesting educational opportunity led the department to enter into a partnership with Picker Imaging (subsequently renamed Marconi, then purchased by

Philips Medical), a major manufacturer of CT scanners and other radiology equipment to conduct a unique training program using the company's multi-slice CT. The course was originally developed by Dr. Kenyon Kopecky and Ronald Fraley. Dr. Jonas Rydberg now serves as director of the program.



Jonas Rydberg, M.D., 2003

The program has continued to expand and has received excellent reviews from those who have attended. In 2001, Philips Medical Systems purchased Marconi. The company was so pleased with the course that it entered into an agreement to support it for at least an additional three years. The course which is offered ten times a year provides dedicated one-on-one teaching to a small class of eight to 12 students. Feedback from the students allows for the course to be continually improved.

The great success of the Philips program has opened the way for similar arrangements with other corporations. Programs like this are held away from the campus, at the ERI building, which is convenient to downtown hotels and to the airport. Training involving new technologies expand the educational objectives of the department and bring in income. Funding has become a very important issue. As clinical revenues have fallen, it has become necessary for the department to find other ways to support department research projects and to add radiologists, scientists, technologists, and support personnel.

I.U. has often participated with manufacturers in clinical research activities. This has been going on for many years. Dr. Roscoe Miller tested bariums, barium bags, and related items for manufacturers. Dr. Henry Wellman, too, worked with companies developing gamma cameras. Both the company and the medical school benefit. The university wants to have access to the most modern equipment, and I.U. Radiology's participation helps manufacturers learn their new market. Establishing certain research facilities across the country, the manufacturer installs units as a part gift for the research. The manufacturer is interested to know in what areas this new technology can be used to enhance clinical efficiency. The department, in turn, learns how this equipment can enhance its clinical services. As a result of such a partnership, the department was among the first to have the new modalities, such as CT, MR, PET, and digital imaging. The clinical work has increased in volume and intensity.

The modalities introduced in the 1970s and 1980s revolutionized radiology. With the first CT scanners and MRIs, I.U. radiologists saw unlimited possibilities in their ability to produce sharper, more detailed images. PET came soon after. With the

acquisition of all of this new technology, the growth which followed fell basically into two areas. First, the workload of the department increased tremendously when it became apparent how valuable these studies could be. Secondly, radiology soon became more attractive as a specialty, and with the continued concentration on specific areas of radiology, doctors could follow a particular radiological interest. Radiology has now become a three-dimensional science. With these new techniques, radiologists can define anatomically the extent of disease much more reliably than they once could. Technology has now made it possible for radiologists and technologists to see what was not possible on films.

The clinical services, like research and education, are expanding. Hospital radiology chiefs have been given certain responsibilities, such as dealing with hospital administration and managing radiology equipment and technologists. Division chiefs are responsible for the delivery of the skills of their sections throughout the hospitals. This combined leadership has worked well.

The explosion in the new technologies, particularly the development of the MR, has greatly benefited neuroradiology. It has made possible many advances in the diagnosis of neurological diseases. With spectroscopy and perfusion and diffusion imaging, it is now possible for these radiologists to do functional imaging as well as anatomic imaging. Neuroradiology, like some of the other subspecialties, functions somewhat as an independent entity within the department because it is less geographically based than some of the other specialties. Neuroradiologists rotate, covering all of the hospitals and taking call at all of the hospitals. Dr. Mary Edwards-

Brown is an exception, spending most of her time at Riley in pediatric neuroradiology there. So much of what the neuroradiologist does requires the understanding of neuro sciences as well as a knowledge of imaging techniques.



Vincent Mathews, M.D., 1990s

Dr. Vincent Mathews has charge of the department's neuro section. In 1995, when Dr. Mathews joined the I.U. faculty, there were three others working with him in the neuroradiology area. Today the number has doubled to eight, and the section has positions for several fellows as well. Recruitment of staff to the neuro section has been important both to care for the increasing clinical demand and to be a part of fMRI, the functional MRI research program. Dr. Joseph Lurito and Dr. Micheal Phillips were involved in that program, and Dr. Mark Lowe was the primary physicist in the group. Dr. Mario Dziedzic and Dr. Yang Wang came on staff in 1999 to begin an interventional neurology clinical program. Dr. Steven Willing also came in 1999. In addition to his work in the interventional neurology clinical program, he was also

involved in Informatics. In 2001, Dr. Eric Awwad was added to the neuro section, primarily to provide clinical coverage, working with Dr. Willing in the interventional neurology practice which has seen a significant growth since Dr. Willing came on staff.

Major research focus of the section has been in fMRI, and they have achieved notable success in this area. Annette Johnson, is doing research work on computerized structured radiology reporting in collaboration with a company called eDictation. She has also been awarded a GE-AUR Radiology Research Academic Fellowship (GERRAF) from the Association of University Radiologists. In the summer of 2002, Dr. Lurito left the department for another position and Dr. Phillips left to assume a directorship position at the Cleveland Clinic.

In 2002, the department decided to become one of the first in the country to create a completely new radiology section of emergency radiology, which is headed by Dr. Donald Hawes. Working in this section are Dr. Kreipke and Dr. Tarver. Dr. Glenn Blackwood, who completed a formal fellowship in emergency room radiology at Harborview Hospital in Seattle, joined in the autumn of 2002.

The interventional section has experienced significant growth in the past dozen years. Early leaders were Robert Holden, Heun Yune, and Gary Becker. Dr. Scott Trerotola came from Johns Hopkins in 1993 to head that section. The following year Dr. Matthew Johnson, also from Johns Hopkins, joined him. Interventional was small then, basically Drs. Trerotola and Johnson and Nicki Harris, who as a resident had worked with Gary

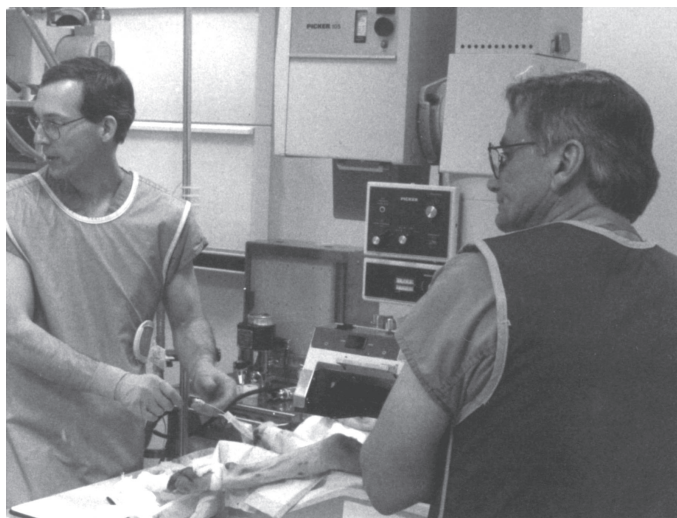
Matthew Johnson, M.D., and Jerry Dreesen, R.T., in the interventional research lab, late-1990s.

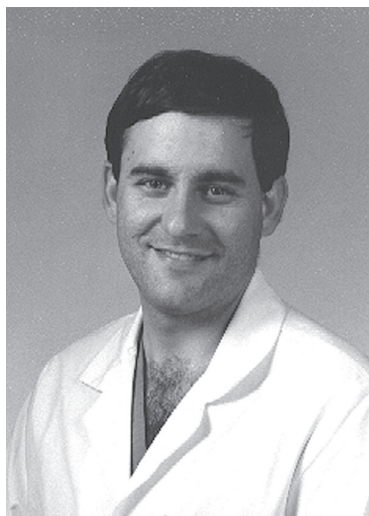


Glenn Blackwood, M.D., 2004

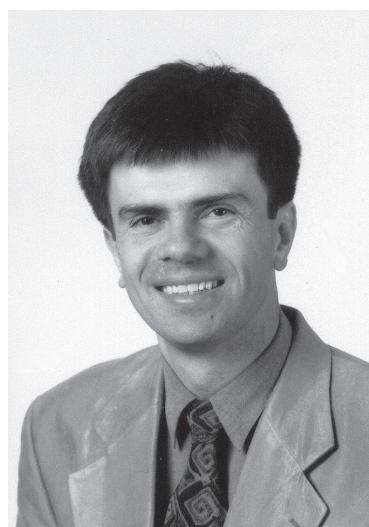


Eric Awwad, M.D., 2004





Gordon McLennan, M.D., 2002



Jan Namyslowski, M.D., 1990s



Nilesch Patel, M.D., 1990s

Becker. Other persons brought in to strengthen the staff were: Dr. Jan Namyslowski, Dr. Nilesch Patel, Dr. Kenneth Moresco, Dr. Gordon McLennan, Dr. Michael Stecker, and Dr. David Agarwal. Dr. Himanshu Shah, now radiology chief at Wishard Hospital, joined the interventional staff in 1996 after serving a residency and fellowship at I.U. By August 2002, the section will have nine people, nearly double the number of interventional radiologists in the early 1990s.

Joining in the summer of 2002 were Dr. Iftikhar Ahmad, Dr. Thomas Casciani, and Dr. Sabah Butty. Francis Marshalleck, who came in as a fellow in 2002, became the first full-time pediatric interventional radiologist on completion of this training in 2003. Interventional radiology section has a rapidly expanding clinical program. There are also many research liaisons with leading equipment companies in the United States. An expanded animal-imaging laboratory moved into a new building with state-of-the-art digital imaging. Dr. McLennan heads this lab, which also includes a strong vascular biology research component.

Musculoskeletal radiology in the 1980s involved many invasive procedures and the injection of dye into joints, but that has changed with the new modalities. Today MR imaging is used a great deal in musculoskeletal imaging. While the musculoskeletal section, bone and joint and radiology, is smaller than some of the other subspecialty sections, it has grown, too, in terms of staff and workload. In the early 1990s, the bone section was small, staffed only by Dr. Ethan Braunstein and Dr. Kenneth Buckwalter. The work volume and the section and have grown rapidly since then. In addition to its chief, Dr. Buckwalter, the musculoskeletal staff includes Dr. Joshua Farber and Dr. Robert Choplin. Dr. Choplin, who completed his musculoskeletal fellowship in early 2002, does both musculoskeletal and chest radiology. Musculoskeletal has two full-time fellows.

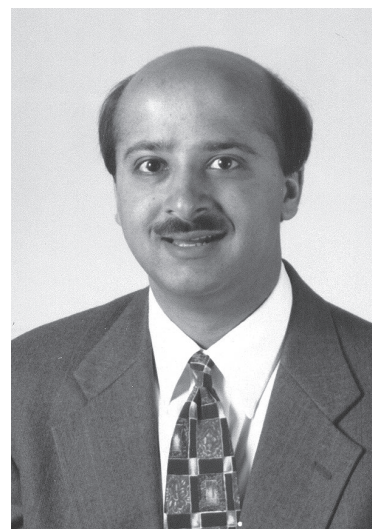
CTs and MRs have made a great difference in bone imaging, and every year this section has seen growth. In 1989 or '90, when Dr. Buckwalter came to I.U., the musculoskeletal group was doing perhaps 300 MRs. In 2002, the count for bone and joint imaging rose to 3,000. The section has expanded its coverage to include work in the Wishard Hospital emergency room. These radiologists also see cases at Riley and at Wishard and manage bone imaging coverage at Johnson Memorial Hospital. In addition, they work with open-sided MRI and read MRIs from a private orthopedic clinic in Danville, Illinois.

The section has been actively exploring the value of very thin slice CT imaging and sophisticated imaging reconstruction. These radiologists are at the leading edge of the application of MRI imaging techniques for diagnosis of bone disease. Drs. Buckwalter and Farber were two of the official orthopedic radiologists on site at the Winter Olympic Games in Salt Lake City in 2002.

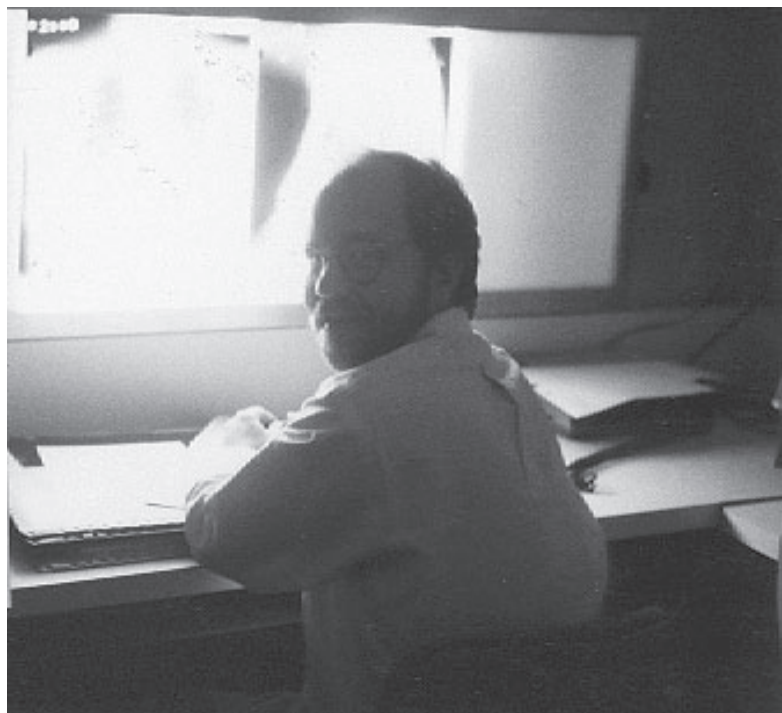
The chest X-ray is perhaps the image most often required by physicians in many areas of medicine. In recent years, chest radiology has gained popularity with



Francis Marshalleck, M.D., 2003



Himanshu Shah, M.D., 1990s



J. Shannon Swan, M.D., in the chest reading room, 2002.



Dewey Conces, M.D., 2004



Helen Winer-Muram, M.D., and fellow Ester Vanderwal Plagman at the viewbox, 2002.

residents in medicine and other special fields. When Dr. Vernon Vix retired as head of this section, Dr. Dewey Conces succeeded him. For a time they were the only chest radiologists in the department. Then Dr. Tarver came on. He had trained at I.U. and did a fellowship in

chest imaging at Duke. Since then, Dr. Helen Winer-Muram, Dr. Mark Frank, and Dr. Choplin have joined the chest section. In addition to his work in chest imaging, Dr. Frank is involved in computer-based educational programs.

For many years, chest imaging involved plain film images and CT images of the chest. More recently, the chest section has become actively involved in lung lesion biopsies. Radiologists in this section have developed techniques where they can use very fine needles to get cellular samples of lung lesions for evaluation under the microscope. The chest section is also very much involved with new applications such as multi-slice CT scanning of the heart, imaging of the coronary arteries, and CT screening of the lungs for early detection of lung cancer.

An initiative within the department calls for the integration of different service functions with the primary referral base. One example is doing orthopedic work in conjunction with the musculoskeletal section and mammography with obstetrics and gynecology. By working together, the departments are hoping to make the patient's hospital experience not only more pleasant but more efficient as well. In a single connected, seamless visit, a patient can be given an examination and be seen by the doctors in one location without the need to move from one area of the hospital to another, dressing and undressing and dressing again.

As a subspecialty, breast imaging is unique not only in terms of the work done in this section but also in terms of the range of patients it deals with. On campus, mammography and breast ultrasound are conducted at the St. Margaret's Breast Center in the Primary Care facility at Wishard Hospital and at University Hospital. In addition, much work is done in the outreach programs. A mobile van services a number of Wishard clinics and I.U. Medical Group clinics. It also goes to the Government Center and to health fairs. An I.U. mammography unit based at the Eli Lilly pharmaceutical company takes screening mammograms which are read at

University Hospital. Mammograms from Johnson Memorial are also read by the department.

Mammography as a subspecialty at I.U. began with one person doing both ultrasound and breast imaging and grew to two very strong campus units. When Dr. Jackson came on the faculty, she was for a long time the only person doing breast imaging. The greater part of the mammography work was done at Wishard Hospital until Dr. Handel Reynolds joined the faculty and was based at University Hospital. He became chief of breast imaging in 1998. Dr. Jackson now heads this section with the assistance of Zeeshan Shah who serves as the mammography fellowship director. The mammography section continues to expand its services. It has a relatively large biopsy service and is exploring the role of MRI in breast imaging. It is also involved in assessment of digital techniques for acquiring mammography images.

To have a breast imaging facility like St. Margaret's Breast Center is unusual for a public hospital in a major city. The financial help of the St. Margaret's Guild has made mammography available to indigent patients at Wishard. The guild has long supported Wishard projects with its annual Decorators' Show House. This section is growing and is reaching many women, particularly many Wishard patients, who otherwise might not have mammograms.

New things are happening in the radiology section once known as GI studies and GU studies. It now is referred to as abdominal radiology or the abdominal imaging section, a relatively new term for a long-standing radiological area of emphasis. Today's technology allows for the scanning of the entire abdomen, enabling radiologists to see both GU and GI anatomic systems at the same time. While some imagers may have a greater interest in one track or the other or in the solid organ of the GI system, all of this section's staff to a varying degree cover all of the abdominal work.



Handel Reynolds, M.D., 1990s



William Berry, M.D., 2002



Fatih Akisik, M.D., 2004



Alex Aisen, M.D., 2002

Under the leadership of its chief, Dr. John Lappas, the abdominal section has grown significantly. Two new faculty joined this section in the summer of 2002, Dr. Fatih Akisik from Turkey, and Dr.

William Berry from Indiana. They brought new expertise to the department and that expanded activities in interventional work with MR and also with imaging of the abdomen.

Dr. Alex Aisen has a particular interest in MR imaging. Dr. Jonas Rydberg, who came from Sweden to I.U. on sabbatical and later joined the faculty, is very much involved in the helical or spiral CT. The department's 16-slice CT scanner has greatly benefited abdominal imaging as well as other sections such as chest and bone imaging. This CT, which was installed at University Hospital in 2002, was at that time only the second such scanner in the United States. Its placement at I.U. resulted from a long-standing relationship with the manufacturer. The initial partnership was with Elscint, one of the first companies to develop a spiral CT. Elscint was subsequently purchased by Picker, which was subsequently purchased by Philips Imaging. The relationship with the ever-developing machine, begun by Dr. Kopecky and now by Dr. Rydberg, continues although the name of the owning company has changed several times.

Dr. Dean D.T. Maglinte, returned to I.U. in October 2000, predominantly in University Hospital's GI area. He is an expert in barium imaging. Dr. Richard Buck is principally the abdominal radiologist at the Veterans Administration Hospital. Dr. Justin Wass and Dr. Tariq Hameed cover Johnson Memorial Hospital and University, dividing their time about equally between the two. Dr. Lappas is based at Wishard Hospital, but his clinical activities are divided between that location and University.



Dean D.T. Maglinte, 2002

Nuclear medicine at I.U. has continued to expand. Currently there are four gamma cameras, three of these with single photon emission computed tomography (SPECT) capability. One is a state-of-the-art camera with coincidence position imaging capability, and one is a mobile unit designed for imaging procedures at the patient's

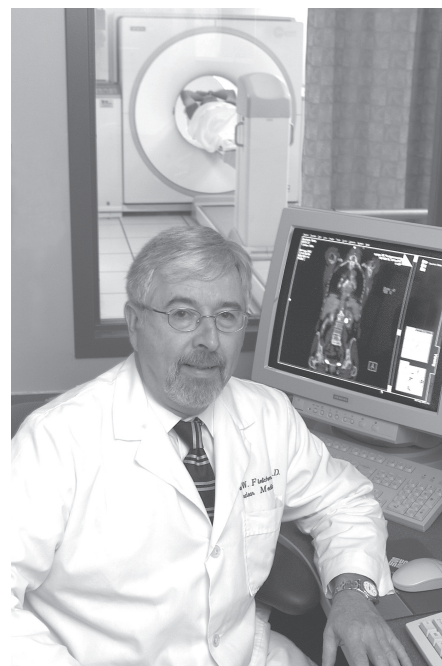
bedside. A cardiology stress laboratory within the nuclear medicine facility is convenient for patients involved in nuclear cardiology procedures.

Three of the original six men in nuclear medicine at I.U. have retired, and Dr. Park, who basically covers Wishard, will be retiring within the next year. Dr. Donald Schauwecker has charge of nuclear medicine at the Roudebush V.A., and Dr. Aslam Siddiqui is at Riley. Dr. Mark Tann also works in this section. The newest addition to that subspecialty is Dr. James Fletcher, who now heads the nuclear medicine section and is based at University Hospital.

Nuclear medicine today is less involved with liver spleen and brain scans than it once was. Today more time is spent on cardiac imaging and bone scans. New pharmaceuticals and new technologies will direct the future of nuclear medicine. Initially a research tool, the PET scanner has recently become used routinely by oncology for cancer indication. The latest equipment to come into the nuclear medicine area is a combined PET/CT scanner. Late in 2001, the Department of Radiology began using this complex imaging system which combines these two modalities. This scanner enables the radiologist to superimpose the images perfectly without a need to move the patient, gaining the advantage of both anatomical detail and physiological detail.

With this new PET/CT system, physicians can more precisely diagnose their patients' illnesses, and they will be better able to monitor and treat these illnesses. This system is especially valuable in detecting and diagnosing cancer and cardiovascular and neurological diseases and in improving patients' therapy. With radiopharmaceutical tracers in the body, PET imaging can measure metabolic, biochemical, and functional activity in living tissue. CT scans produce a series of images which show anatomical structure and abnormalities which are not usually revealed on conventional X-rays. I.U. was the third U.S. medical institution to acquire the PET/CT system.

In the past decade, new updated and improved equipment has been added at the four campus hospitals. From one MRI, the department has gone to seven – three at Riley, two at University, and one each at Wishard and the V.A. In that period, the number of CTs on campus has gone from five to nine. The 16-slice CT has been the

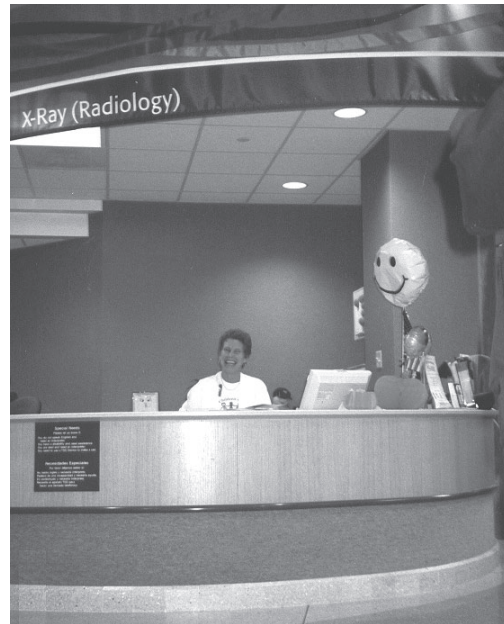
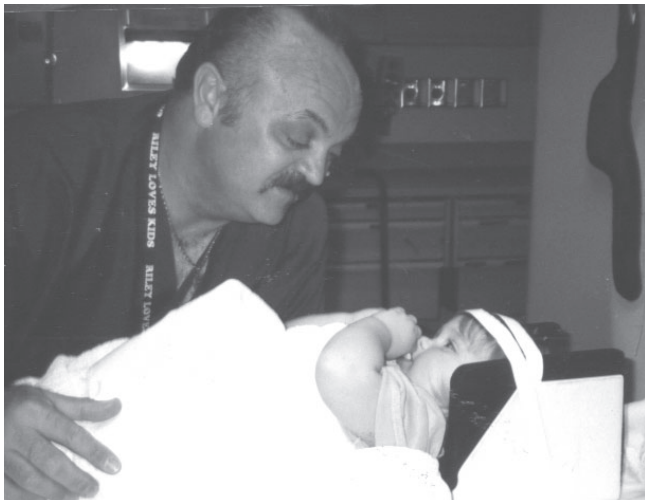


James Fletcher, M.D., chief of Nuclear Medicine, with the department's new PET-CT system, 2002.

latest innovation. These numbers are changing as older machines are replaced. But because they are expensive, the amount of funding available often determines how soon a CT or MR can be updated.

When the new Riley Hospital outpatient service building opened in September 2000, the radiology section there gained four rooms and a redesigned area for film discussion. The MRI was installed about 1986 in an especially constructed building in the parking lot. Two new MR magnets were installed at Riley in 2001. With the opening of the Riley Outpatient Center in 2000, a helipad was built on top of the outpatient building. Acutely ill children from all around the state of Indiana can be transported rapidly and directly to Riley Hospital.

Riley is self-sufficient in its mission, and the work there is relatively independent of the other sites on campus. Pediatric radiology has for years been a great strength of the I.U. radiology department. Riley Hospital for Children has a well-earned reputation as an outstanding health care facility. The goal of the radiologists who work there has been to improve the health of every child and,



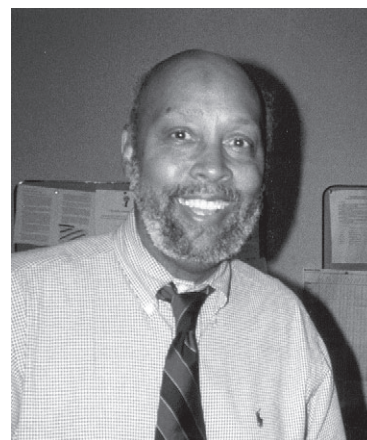
Welcome to the Riley Outpatient Center Radiology Department, 2001.



Eugene Klatte, now an Emeritus Professor, continues to enjoy working with young patients and medical staff at Riley. The photo above shows Dr. Klatte examining a 4 year-old in 2001.

Erv Herman, R.T., comforts 2 year-old Mallory, the daughter of Susan Wilson, while preparing for a CT in the ROC, 2001.

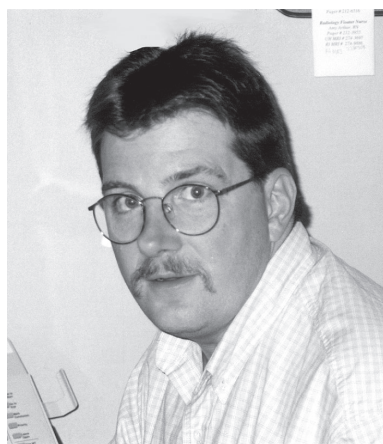
conversely, to do them no harm. Radiologists caring for children recognize that the child, smaller in size than an adult, requires unique facilities and skills. For example, every effort is made to minimize the radiation dose. Special filters and cones and other devices help minimize the dosage given to children during a radiology procedure. Riley was a pioneer in using digital imaging that allows dose reduction.



John Smith, M.D., 1996

There is also a psychological difference with child patients in contrast to adults which calls for a pediatric radiologist's particular skills. The radiological care of sick and injured children calls for personnel trained and proficient in pediatric care. At Riley, a dedicated team with specialized skills has been developed. All of the staff from the receptionist to the technologist, the radiologist, and the nurse are well trained and knowledgeable about the special needs of children and the special care that it takes to look after them when they are ill. Dr. Jack Smith, once chief at Riley, used to shed his white coat when seeing young patients, thinking that they might be less afraid without that obvious recognition of a doctor. With the whole environment of Riley Hospital dedicated to children, the atmosphere there is kept light hearted and child-centered.

At Riley Hospital, Dr. Richard Gunderman and the others in the pediatric radiology section have been assisted at least eight or nine months a year by Dr. Klatte. He has come full circle, working in a department he helped design before he went to Vanderbilt. Long-term stays are commonplace at Riley. Dr. Cohen has been there 23 years and Dr. Jack Smith was there 29. Dr. Siddiqui, in nuclear medicine at Riley, has been there more than 25 years. A number of technologists currently there were on the staff in 1979 when Dr. Cohen first came to Riley. All of this testifies to Riley as a



Donald Corea, D.O., 2001



Richard Gunderman, M.D., Ph.D.



Riley Halloween parties were always great fun for the staff and for patients.

satisfying work place, a place where people work well together. Caring for children and seeing that as a mission develops loyalty. Medical students rotate specifically through Riley. A special elective in pediatric radiology is offered. Residents studying pediatrics have a rotation elective, and many will rotate through Riley's department on a one-month stay. Recent additions to the Riley faculty include Donald Corea, D.O., Kimberly Applegate, and Boaz Karmazyn.

Dr. Klatte was one of the early radiologists in the country to recognize the need to develop a subspecialty in pediatric radiology, and he was one of the founding members of the Society of Pediatric Radiology. At Riley, he has been followed by many excellent leaders, including Drs. Kurlander, Taybi, Franken, Cohen, Smith, and more recently, Dr. Gunderman.

Like Riley, Wishard Hospital has a particular uniqueness which makes working there different from the other hospitals on campus. Residents assigned to Wishard get core training. For more experience with tertiary medical care and tertiary levels of case material, they rotate to other sites on the medical school campus. The Wishard staff spends considerable time teaching the residents, talking over the clinical cases of the day, and giving an hour to a discussion of unknown films.

Wishard's emergency room is one of the largest in the city, perhaps in the state. Dr. Donald Kreipke heads the daytime radiology staff of the emergency room. When Dr. Holden was chief of the hospital's radiology, a policy was instituted that staff would stay until about 11 p.m. Then a better solution came about when Dr. Susan Ivancevich joined the faculty following a musculoskeletal fellowship. She was recruited to cover the late night hours, becoming during her time at Wishard a very welcome second-shift equivalent of Dr. Kreipke. Having one person covering the night service brought a welcome continuity to a busy emergency room.



Susan Ivancevich, M.D.

The radiology group at Wishard has been challenged in the past two or three years by shortages of staff, nurses, technologists, and radiologists. Many of these people found themselves working overtime in the Wishard emergency room, three out of four weekends. But crises are a part of Wishard history. Hospital loyalty is strong. The radiologists based there enjoy working in that busy, harried hospital atmosphere and appreciate the camaraderie found in being part of the Wishard team.

There have been a number of changes at the hospital. The new stroke center there has called for a greater need for the imaging of stroke victims. Major additions have

come in terms of a million-dollar-plus upgrade of the MR and the addition of two new CTs, one of which is quad slice. What is most impressive is the installation of a comprehensive PACS program which allows for a “soft read,” a filmless viewing of images. The AGFA PACS at Wishard has been expanded. There are monitors now in clinics and, in time, monitors will be installed in operating rooms.

Wishard was the first of the campus hospitals to have a complete PACS. It was also the first of the hospitals served by I.U. Radiology to add a voice recognition dictation service, called Powerscribe. This enables reports to be available immediately by telephone and to be added automatically to the images on PACS. Referring physicians can look at images and at the report on the same screen. A few of the technologies are not yet fully digital at Wishard, but it is very nearly a filmless environment.



Himanshu Shah, M.D., 2004

When Dr. Hawes became vice chairman for clinical affairs, Dr. Himanshu Shah in July of 2000 replaced him as chief of radiology at Wishard Hospital. Currently, there are ongoing discussions about building a completely new Wishard Hospital with more than 400 beds. An enlarged Wishard would provide many new opportunities for radiology.

The Veterans Administration Hospital has been considered by some to be a good place to work because there is less activity at the V.A. than at the other hospitals. The routine there isn't as hectic or as structured, and its distance from University Hospital has made it more detached from the other campus units. Contrary to what most people think, the majority of patients at the Roudebush Veterans Administration Hospital are not there because of war injuries. Its patients are veterans who, for the most part, suffer from such health problems as lung cancer, emphysema, and liver diseases. It is a very different patient population than those found in the other hospitals which the I.U. radiologists cover.

The hospital is, of course, federally funded, and at this particular time nationally, the V.A. is in a declining financial situation. The equipment there is becoming obsolete, most of it more than five years old. There is, however, a digital chest room and a relatively new angiographic suite. Dr. Richard Buck serves as head of the V.A.'s abdominal section and oversees the ultrasounds and body CTs. Dr. Heun Yune, now a retired I.U. radiologist, comes three days a week, and other radiologists rotate into the V.A.

The professional staff at the V.A. has achieved a great deal. The university's only nuclear cardiology service was developed there. Before Dr. Robert Burt moved over

to University Hospital, a full cardiology suite was set up in the radiology department of the V.A. for exercise and imaging. This location was more convenient for doctors and for patients, who no longer had to be moved about the hospital. Originally, work in nuclear cardiology had involved dragging a gamma camera upstairs to a suite with stress facilities. By the mid-1990s, the V.A.'s radiology department had grown from a small space, about one-fourth of a floor in the hospital to half of the second floor. It was extensively remodeled at that time. New equipment was added, a computerized CT scanner and ultrasound. There was a full nuclear section as well.

Dr. Edward Cockerill was for many years director of radiology at the V.A. Hospital. His partnership with the hospital went back even further as he actually lived in the hospital as a medical student. When he retired, Dr. Donald Schauwecker took over as medical director at the V.A. The V.A. has for many years had PACS and is moving into a completely filmless environment.



Don Schauwecker, Ph.D., M.D., 2004

The V.A. was not the only radiology space undergoing expansion as the radiology staff and workload at I.U. grew. All of the areas were undergoing change. In the old Clinical Building, the radiology area had been redesigned at least twice. Left undisturbed there, however, were the original fluoroscopy rooms with the same doors and lead-lined walls. Because of the X-ray equipment installed there, these rooms have not been altered. Today, the old radiology space houses the offices of the Radiologic Sciences Programs. In the years since University Hospital opened, the Indiana University Medical Center campus has grown with the addition of the Medical Education Building and two research buildings. Research facilities set up by Dr. Klatte have been updated and enlarged.

Like the other hospitals at the Medical Center campus, University Hospital is unique in its patient population. The more acute patients are at Wishard, the more chronic at the Veterans Hospital. Riley, of course, treats only children. University, however, is primarily a referral center. Most of its cases are patients with unusual diseases, diseases which have developed complications, or simply multiple diseases that make their care complex. Referring physicians send these patients to University Hospital for special care. The demands on clinicians are somewhat different there. Dr. Dewey Conces serves as head of the hospital's radiology division as well as the chief of chest X-ray. University Hospital is the Department of Radiology's home base. The department chairman's office and other administrative offices are there.

Space has become the biggest issue facing the staff of University Hospital. Since the building went up in the early 1970s, renovations have been made to keep up with the continuing need for more radiology department space. But always the problem was finding the available space so badly needed. Now with few options open for renovation, plans are underway to expand toward Michigan Street.

In the mid-1990s, the high tech imaging center was a much-needed expansion. Later in the 1990s, an extensive remodeling program provided much needed additional space for faculty. The installation of the completed PACS system freed up much needed space as stored film was moved out of the hospital. The services provided at University Hospital are somewhat more subspecialized than in the other hospitals, and the faculty tend to work in more separated subspecialty units.

The inpatient hospital situation at the Medical Center has changed in recent years with patient care determined less by medical personnel and more by managed care programs. Because it depends on patient fees for its income, the hospital cannot afford to keep for any length of time a patient whose fees have already been set by insurance. Today, almost all major insurers have managed care programs requiring pre-approval for medical treatment. Unfortunately, all of this is happening at the same time that new technologies are coming in, new methods of providing better care, and when there is a vital need for expanded hospital facilities. This outside control of funding has called for the administration of hospitals, and the departments within them, to be more rigid and complex. Ironically, it has also promoted much of the increase in workload for the Department of Radiology. In order for patients to have shorter hospital stays, the need is greater for more diagnosis to be done without invasion.

A great strength of the I.U. Department of Radiology over the years has been its stability. A 20-year tenure for a faculty member was not uncommon. This has been true not only of physicians in the department but of support personnel as well. Stability goes beyond long tenures. The leadership over the years has moved smoothly from chairman to chairman. While each has had his own management style, there was a commonality in each chairman's expectation of excellence in the department.



(l-r) Glenn Moak, M.D., Heun Yune, M.D. and Vernon Vix, M.D., celebrating their retirement, June 25, 1994. Photo from Heun Yune's collection.



Robert Burt, MD, works in the Indiana University Hospital Nuclear Medicine Reading Room, 2000.

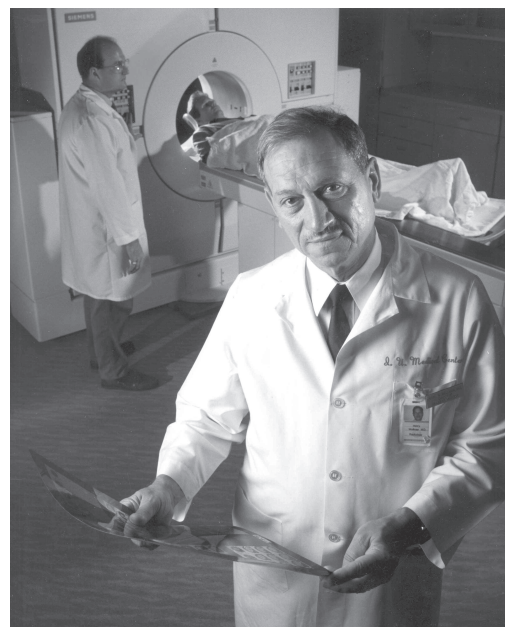
Probably the fact that each chairman came into that position from years of experience within the department contributed to his success.

Three popular members of the radiology faculty retired in 1994, each of whom had worked 20 or more years in the

I.U. department. Dr. Heun Yune and Dr. Vernon Vix had come to the medical school with Dr. Klatte. Dr. Glenn Moak had been recruited by Dr. Klatte in 1974 and soon became involved in a special medical student teaching program. To their show appreciation to these three valued radiologists, department members honored them with a formal farewell party.

Then, in 1997, Dr. Henry Wellman retired after 26 years as head of I.U. nuclear medicine. Three years later, in 2000, retirement came for the full-time I.U. radiologist with the greatest number of years in the department. Dr. Edward Cockerill had served continuously for 32 years, longer even than Dr. John Campbell. Dr. Robert Burt, who succeeded Dr. Wellman as head of nuclear medicine, and Dr. John Smith, chief at Riley, left in 2001. All of these men had spent the greater part of their careers at I.U. Each had been in the department for more than 25 years. Department members lost a valued colleague in 1995 when Dr. John Robb died. For many years a part-time volunteer at General Hospital, Dr. Robb had come on full time in 1972 when he closed his downtown office. He was a skilled orthopedic radiologist and a much-appreciated mentor of radiology and orthopedics residents during his 48-year I.U. affiliation.

Dr. Cohen, as chairman, developed a strong faculty. In addition to their work on campus, these men and women have contributed to radiology publications and conferences, enhancing not only their own reputations as radiologists but the reputation of the university as well. During 1999, for example, faculty



Henry Wellman, M.D. Photograph #UA24-000704, UA 24, IUPUI University Library Special Collections and Archives.

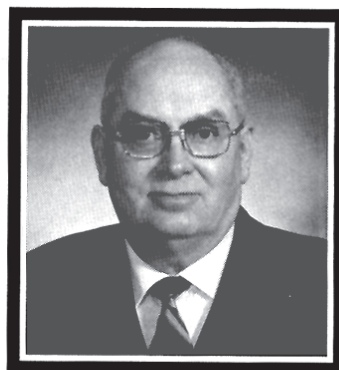
JOHN A. ROBB, M.D.
(1915-1995)

Dr. John A. Robb, radiologist and faculty member at the I.U. School of Medicine, died May 31 at the age of 79.

Graduated from the University of Nebraska College of Medicine in 1943, Dr. Robb began practicing radiology in Indianapolis after completing his residency at St. Louis City Hospital in 1946. When he began his practice, the radiology training program at Indianapolis City Hospital (now Wishard Memorial Hospital) was on probation due to a lack of staff. Dr. Robb and his associate, Dr. Lester Smith, volunteered to begin staffing the department.

He continued the voluntary support throughout his private practice from 1946 to 1972. In 1972, he closed his private practice and joined the Department of Radiology at the medical school full time, becoming known as a skeletal expert. He was named outstanding teacher by radiology residents in 1975. He also served as an alternate delegate for the Society from 1964-1967.

Dr. Robb was a member of the Society, the Indiana Roentgen Society, the Indiana State and American Medical Associations.



members served as either the first or senior author on more than 20 book chapters, wrote nearly 300 papers and articles, gave over 100 invited lectures and presentations, and created several multimedia projects. Dr. Kenyon Kopecky traveled to China and Taiwan that year where he presented lectures before radiological societies. A number of the faculty also received awards. Dr. Cohen was honored, too, by being named a fellow of the American College of Radiology, chosen for his outstanding contributions to the field of radiology. These kinds of successes have occurred in later years as well.

There is a constant effort to attract additional faculty, both from I.U.'s residency and fellowship programs and from outside the university. As the field of radiology becomes increasingly specialized, the Department of Radiology is seeking persons whose special areas of interest match particular projects and programs within the department. As the medical school gains greater recognition as an outstanding medical center and as the department becomes more widely recognized for its achievements, the recruiting of new staff becomes even more important. A mentoring program to welcome new faculty and assist them in settling into the department was introduced by Dr. Helen Winer-Muram.



Heun Yune, M.D., was awarded the Indiana Radiological Society Gold Medal in May 1999. John Knotte, M.D., presented the award. Photo from Heun Yune's collection.

In recent years, there has been greater visibility of I.U. radiologists in a range of venues, from conferences and other professional meetings to visits overseas. Dr. Vincent Mathews, for example, was invited to China to speak about the multi-slice CT. He was also asked to speak of his work in functional MR. He was made a visiting professor at the Shandong Medical Imaging Research Institute, the only radiology research institute in China. A Chinese research neuroradiologist working with functional MR was recruited to join I.U.'s program.

Radiology department faculty have gained prominence in state and national radiological organizations and in conferences relating to their own specialties. Their activities within these groups provide them with opportunities to draw new people to the Indiana University Medical Center. Dr. Kenneth Buckwalter sees speaking invitations before these groups, particularly for section chiefs, as good visibility, the chance to help other people recognize I.U. as an especially good place to work.

Over the years, many members of the department played prominent roles nationally. Dr. John Campbell in 1964 was president of the Association of University Radiologists. Dr. John Beeler served as president of the Radiological Society of North America in 1975. In 1998-99, Dr. James W. Fletcher was president and chairman of the board of directors of the Society of Nuclear Medicine. Currently, Dr. Valerie Jackson is on the board of trustees of the American Board of Radiology. She also served as president of the American College of Radiology from 2002-03. Dr. Robert Tarver was president of the Society of Thoracic Radiology. A prior resident and faculty member, Dr. Gary Becker, is a board member of the Radiological Society of North America (RSNA) and a founding editor of the *Journal of Vascular and Interventional Radiology*.

In 1999, Susan Wilson, the new communications specialist, enabled the department to establish a presence on the exhibitor floor at RSNA. The department's success with this first booth was encouraging. Since 2000, the booth, which has been located in publishers row has assisted in the department's recruiting activities and attracted a great deal of interest for its educational programs.

(l-r) Residency Coordinator, Lois Shuman; Parvez Masood, M.D., 2nd year resident; and Emily Lee, a fellow, visit in the 2002 RSNA booth.



Eugene Klatte, M.D., and his wife, Barbara, enjoy the reception following the wedding of Mike La Masters' daughter, Elaine, in 1997.

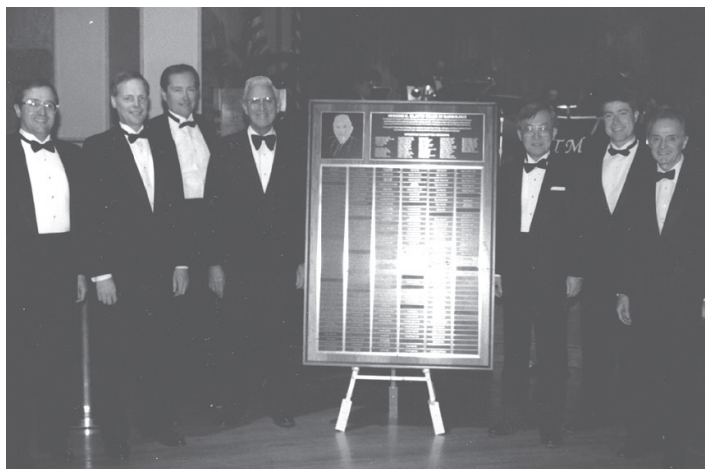


A greater effort is being made to maintain contact with former faculty and residents. Recently, Gene Klatte assumed responsibility of chairman of a small committee to foster alumni relations and look after alumni affairs. The first program from this committee was a reunion of radiologists who had trained during the Jack Campbell era. About 20 radiologists gathered in Indianapolis during the resident Campbell-Klatte lecture series in the spring of 2002 and enjoyed this opportunity for renewing old acquaintances.

The annual Campbell-Klatte Lecture Series has been held each spring for more than 30 years. A nationally-known radiologist is the guest lecturer, and a number of I.U. radiology residents make presentations of projects they have worked on. There are numerous other special lectures as well, such as the Raymond C. Beeler Lecture and the Joseph Morton Lecture. The Vernon Vix Lecture emphasizes the association of clinicians. The Susanne Von Schuching Lecture centers on advances in radiopharmaceutical development. Special awards are given in the name of the department, such as the Heun Y. Yune award for outstanding resident teaching and the Glenn Moak outstanding teaching award for medical education. Over a decade ago, Dr. Holden and Dr. Franken decided that I.U. should begin a Big Ten radiology chairs meeting. This annual session still meets, including each year five to 10 other guests as well as department chairmen.

Among the faculty nothing is more highly regarded than the three department endowed chairs, two endowed professorships and one endowed lectureship, which have been established over the years. The

(l-r) Ted Payne, M.D.; Gordon McLaughlin, M.D.; Chuck Jerdan from the Indiana University Development Office; Eugene Klatte, M.D.; committee co-chairs Dr. Heun Yune, M.D. and Dr. Michael McCrea, M.D.; and Vernon Vix, M.D., at Klatte's retirement celebrating the endowment of the Eugene C. Klatte Chair in Radiology, 1991. Photo from Heun Yune's collection.



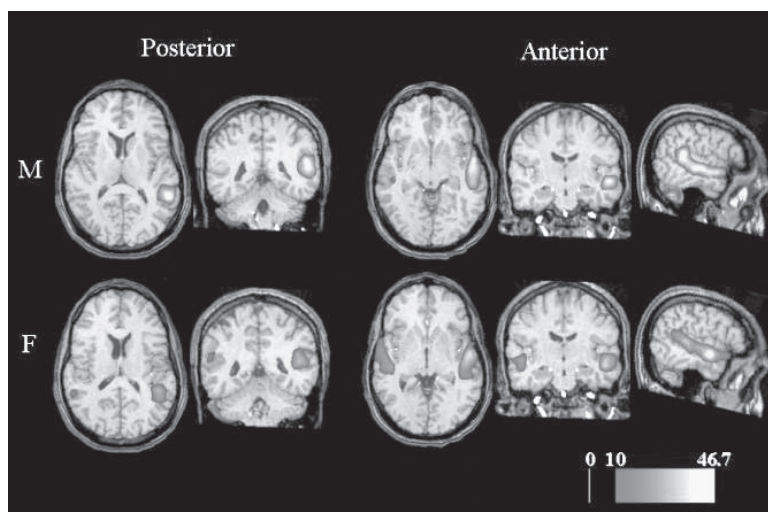


Sixteen poster exhibits by residents and fellows are on display during this day-long tradition. Shown above (l-r) are former department chairmen, Mervyn D. Cohen, MB,ChB,MD (1995-2002) and John Campbell, MD (1955-1970); and fourth-year resident Darel Heitkamp, MD., who served as judges during the lecture series held May 20, 2004.

first chair, named in honor of Dr. Raymond C. Beeler, was endowed with a generous gift from his widow, matched by department funds. At the moment, that chair is not filled. Dr. Gary Hutchins holds the endowed professorship honoring Dr. Beeler's son, Dr. John Beeler. The recipient of the Dr. John A. Campbell Professorship is Dr. Valerie Jackson. The holder of the Dr. Eugene Klatte chair is Dr. Mervyn Cohen. The Dr. Robert A. Holden chair and the John A. Campbell Lectureship are vacant now. These positions have been endowed through the I. U. Foundation with contributions coming chiefly from former residents and current faculty. Income generated by the chairs provides for the salary and expenses of the person holding that position. Any additional income supports medical school teaching and research.

In the summer of 2000, the department gained unexpected international attention. The results of a brain imaging experiment conducted at the Medical Center were highly publicized, even resulting in the appearance of two department neuroradiologists on national television. Dr. Joseph Lurito and Dr. Micheal Phillips were surprised by the publicity resulting from an abstract they had submitted to the Radiological Society of North America at the time of that organization's meeting in Chicago.

Their study began with a listening task as a part of a language behavioral paradigm



for use in functioning MRI. Subjects listened to a tape recording, both forward and backward, of John

Composites of brain activity from 10 males (top row) and 10 females (bottom row) showing both anterior and posterior temporal lobe views when they underwent functional magnetic resonance imaging while listening to excerpts from a popular novel. The images reflect blood flow to the areas of the brain activated by the exercise.

Grisham's book, *The Partner*. Dr. Lurito and Dr. Phillips and their colleagues, Dr. Vincent Mathews and Dr. Mark Lowe, were attempting to determine which side of a person's brain was language dominant. The study was unique in that it used the forward versus backward speech. All but one of the seven or eight subjects were men. The results of the study showed a striking asymmetry from side to side in the temporal lobes of the brain, the areas of the brain activated by this particular task. The doctors were pleased with the results. This part of the brain was long known to be important in understanding speech and processing language.

Feeling the need for additional subjects, they recruited another six or seven who, by chance, happened to be women. These were random selections. Gender had no part in the experiment. The results gained from the second set of subjects, however, were different, a fact which surprised the physicians conducting the study. Activation in the women was far more symmetric on the two sides of the brain so that it appeared both sides of the brain were involved. When men listened, only one side of the brain was involved. Additional subjects were tested, bringing the numbers up to 10 of each gender.

The abstract of this study was among those selected by the RSNA as interesting to the press and the general public. Dr. Lurito spent an entire day with the press, on the telephone giving interviews. With the encouragement of the media, the study became a gender issue, the male brain versus the female. Some of the abstract's data and the physicians' responses were distorted and misquoted, but the world did become more aware of the I. U. medical school's radiology department and the work it was initiating. From a medical point of view, other aspects of the studies being conducted by these doctors might have been more interesting, but the male-female issue brought out a popular response.

Under Dr. Cohen's chairmanship, the department experienced great success. It moved out in new directions, gaining increased recognition for the department and the university for its achievements. A special focus on basic research has resulted in the very successful Division of Imaging Sciences. A number of strong academic research programs are in place. Another great emphasis has been on the possibilities offered by changing technology both in the practice of radiology and in more efficient techniques for communicating radiological information to doctors and their patients.

There has been continual growth of imaging services provided in all of the hospitals that the department serves. I.U. Radiology has also developed external initiatives. Earlier in the 1990s, it became involved in furnishing professional services to the first open-sided MR unit installed in Indianapolis. In addition to mammography services at Eli Lilly, the department has also supplied orthopedic imaging services on the west side of Indianapolis.

More and more, radiology is changing, expanding to involve the imaging of the body's functions. It is no longer restricted to pictures of the body's anatomy but effectively imaging its physiology as well. This appears to be the new frontier of radiology, one already being recognized at Indiana University. The faculty anticipate change but know, too, that certain factors do not change. One radiologist explains it this way: "I know that what I do in 20 years will probably be very different from what I do now, and the machines I work with will be different. But the principles I learned in my training – the physiology and anatomy that I have learned – they don't change. We just understand them better, and the newer machines we get allow us to look at them in different ways. But it's still kind of the same thing we're doing – just with different tools."

In the 55 years since the university's Department of Radiology was established, space given to radiology has increased in all the campus hospitals, the faculty numbers have multiplied many times over, and technology has changed for all time the imaging possibilities. Radiology has come a long way from dark basement rooms, red lights and goggles, wet films and view boxes. But what has not changed is the department's commitment to excellent academic teaching, quality clinical care, and sound basic research.

Something else that has remained vital to the department for over half a century is the dedication of the staff to their work and to their colleagues. When he was new to the faculty, Dr. Matthew Johnson was asked why he had joined I.U. radiology. He cited several reasons: a variety of interesting cases in four different hospitals, a great support system, a good physical plant, the availability of basic research, and knowledgeable people. This evaluation is one with which many would agree.

An important goal for Dr. Cohen was faculty development, a mentoring program that would train, guide, and support its new faculty. He has wanted to establish a work environment in which everyone on staff, whether physicians, technologists, or office personnel, would be working in a warm and caring atmosphere, where congeniality and cooperation were key. As he puts it, "Everyone has a right to feel happy at work."

There is a social side, too, which fosters that mutual respect and congeniality. The larger the faculty and staff the more difficult it seems to have social events for everyone. However, the tradition of department parties, begun by the Campbells and Millers and Robbs and continued in great style by the Klattes, continues even to this day. When Dr. Holden became chairman, he instituted a very successful summer picnic on his farm on the western outskirts of Indianapolis. Drinks, great food, and games provided a wonderful atmosphere for people to get to know each other.

This picnic was replaced by the annual summer get together at Conner Prairie featuring a splendid outdoor buffet and an Indianapolis Symphony Orchestra concert. The year-end party includes a large celebration, which for several years has been held at the Skyline Club at the top of the A.U.L. Building in downtown Indianapolis. This celebration is always well attended and provides another opportunity for department members to socialize and interact. For many years Dr. Lappas, working together with Janice Riley and later with Susan Wilson, has coordinated and organized many of the department's social activities. Well known in the department for his ability to recognize excellent cuisine and a good bottle of wine, Dr. Lappas has done an outstanding job of party planning.

Dr. Cohen, like the chairmen who preceded him, always felt that it was important for everyone in the department to feel like family, to realize that whatever their particular roles in the operation of the department, they were necessary to its success. Each member of the department staff — whether office personnel, researchers, technologists, or medical specialists — was there to provide a service needed by the patients and clinicians who came to radiology for help.

At the close of 2002, Dr. Cohen's era ended when he resigned the chairmanship. He continues as faculty, however, based at Riley in pediatric radiology.

The 2002 holiday party once again brought the entire department together, with more than 600 people in attendance. (top) Mervyn D. Cohen, M.B.,Ch.B., M.D. and his wife with Santa; (middle) imaging sciences staff member Shannon Arango (r) with her mother; IURA Outreach Manager, Rita McFarland (l) with IURA Executive Director Tom Gibbs (r) and Santa.



A New Perspective:
The
Jackson Years

2003 -



When Dr. Cohen stepped down at the close of 2002, Dr. Valerie Jackson was appointed interim chairman of the Department of Radiology.

This new position, like others earlier in her career, seemed to come about without any intention on her part. Dr. Jackson first became interested in radiology as an I.U. medical school student. She began a radiology residency in 1978 and, after a junior staff year, joined the faculty in 1982. Initially, she worked in ultrasound at Wishard Hospital where Dr. Holden was chief of radiology. After a while, she was motivated to work with mammography, breast imaging; later she headed that section. Dr. Holden encouraged her to become the department's residency program director, a position Dr. Robert Tarver assumed when Dr. Jackson agreed to become the department's interim chairman.



Valerie Jackson, M.D.

The unification of the two radiologist groups, IURA and RSI, became a key focus in 2003. In July Methodist Hospital radiologists became Clarian employees, the first step in the formation of a single radiology group, Indiana Radiology Partners or IRP. All the clinical services of IURA radiologists were leased to Clarian at the same time. After much discussion and deliberation, an agreement was reached leading to the formation of a single radiology group for Clarian Health Partners. Dr. Jackson and others worked very hard to achieve a single source of radiology services for Clarian.

IRP will provide all of the clinical services within Clarian as well as I.U.'s other radiology practices, such as the V.A., Wishard, and Johnson Memorial hospitals and outreach programs such as the National Institute of Fitness and Sport and an imaging center at 103rd Street and Spring Mill Road.

Within the I.U. radiology department, the faculty remains stable. The number of full-time faculty has grown steadily. Currently it is composed of 58 board-certified radiologists, over 19 Ph.D. scientists, 64 residents, and 17 radiology fellows and five post-doctoral fellows. Today there are nearly 15 times the number of full-time radiologists than were in the department 50 years ago. The number of part-time faculty also has increased.

In recent years, a change has come in the academic makeup of the faculty with the addition in the staff of physicists, chemists, and others with non-medical doctorates who work in research and non-clinical areas of radiology. The teaching portion of the department's mission, whether residents, medical students, or technologists, continues to be foremost. Underlying all of that has been the firm determination to maintain an excellent academic program.

New faculty have been added. In March 2003, Dr. Annette Douglas-Akinwande and Dr. Andrew Kalnin joined the neuroradiology section. Dr. Kalnin's wife, Kristine Mosier, D.M.D., Ph.D., also came into the department. Her work is focused on the ear nose and throat part of the neuroradiology section and the Division of Imaging Sciences. Dr. Maria Dolar became a member of neuroradiology, too, after the completion of her fellowship in July 2003. Dr. Geoffrey Jones joined the interventional section the same month. In August 2003, on completion of his radiology residency, Dr. Shawn Teague began work full time in the chest section. As a resident, Dr. Teague collaborated with Dr. Mark Tann, then a nuclear medicine fellow, and Scott Persohn to develop training manuals for the department's multi-slice CT course. Joining the mammography section in 2003 were two former residents, Dr. Victoria Edmond and Dr. Arouj Hashmi. Two new members of the abdominal section came in that year, Dr. Chandana Lall and Dr. Kumar Sandrasegaran.

Dr. Vincent Mathews and Dr. Shannon Swan have left. Dr. Mathews went to private practice at St. Vincent Hospital and Dr. Swan went to Harvard University to work in outcomes research. Dr. Hee-Myung Park, in nuclear medicine, retired in December 2003 after 30 years with the department. Members of the department were saddened when Dr. Robert Burt, a former director of nuclear medicine, died in October of 2003.



Kristine Mosier, D.M.D., Ph.D., 2004



Victoria Edmond M.D., 2004



Kumar Sandrasegaran M.D., 2004

IN MEMORIAM

Robert W. Burt, Sr., MD, 1937–2003

Robert W. Burt, Sr., MD, died in Indianapolis, IN, on October 13, 2003, at the age of 66 as the result of an aortic aneurysm. Bob was emeritus professor of radiology at Indiana University (IU) School of Medicine and, for 3 years before his retirement in 2000, director of the Nuclear Medicine Division.

In 1972, upon passing the nuclear medicine board examinations, he joined the IU nuclear medicine team as a most cooperative player. With a growing number of affiliated hospitals, administrators, and personnel, Bob's coordination skills assisted greatly in the development of a successful nuclear medicine clinical and educational program at the IU Medical Center. His background in the military melded well with his principal responsibility as clinical chief of nuclear medicine at the Roudebush Veteran's Affairs (VA) Hospital for a quarter of a century. Indeed, having experienced the onset of coronary artery disease at a very young age, precipitating his military discharge, he empathized with fellow veterans, even to the extent of pursuing cardiac nuclear medicine as his main professional interest. One of the results was a VA nuclear medicine cardiology service second to none in the nation. His medical problems never dampened his jovial spirit nor his natural amiability to all with whom he worked. Perhaps the value that he so clearly placed on every precious minute of life let him shun trivia and swiftly get to the heart of matters—he had an enviable gift of brevity, contributing often to the shortening of ponderous meetings. He was a true colleague and always ready to help with the many problems that the team encountered over the years. He was a perennial favorite with nuclear medicine residents and technology trainees.

Born in 1937 in Warsaw, IN, Bob graduated from Manchester College (North Manchester, IN) with a BS in Chemistry (1959) and from the Northwestern University Medical School (Chicago, IL) in 1963. He entered the Navy that year and interned at the Naval Hospital in Newport, RI. He was a resident in internal medicine at the Naval Hospital in Oakland, CA, from 1966 to 1969, when he was discharged with the rank of Lieutenant Commander. From 1969 to 1972 he studied nuclear medicine as a fellow at the Hospital of the University of Pennsylvania (HUP; Philadelphia). There he worked with David Kuhl, MD, with whom he published "Giant splenomegaly in sarcoidosis demonstrated by radionuclide scintiphography" (*JAMA*. 1971; 215:2110–2111). While at HUP, Bob also served as an assistant instructor in the Department of Radiology.

During his long association with the Indiana University School of Medicine he served as assistant, associate, and full professor of radiology and, ultimately, as director of the Division of Nuclear Medicine. At the Roudebush VA Med-

ical Center (Indianapolis, IN), he developed the nuclear medicine service "from scratch" and served as its chief for many years. In later years, his effective interaction with VA administrators led to one of the most exquisitely equipped VA nuclear medicine facilities extant, especially for SPECT and nuclear cardiology.



Robert W. Burt

With the advent of PET imaging devices and medical cyclotrons, Bob cooperated completely in the pursuit of a joint PET facility between the VA and the IU Hospitals, beginning in the mid 1980s and coming to fruition in 1990. Without that cooperation, the IU Medical Center probably would not have had PET for another decade. (Had that been the case, the excellent current PET patient studies on the SNM Web site from the IU Nuclear Medicine Division might not have been possible.) In addition, the early introduction of PET spawned a burst of digital imaging activity with the installation of a fiberoptic network linking the IU medical institutions, allowing Bob to become a pioneer in filmless digital medical imaging for the institutions. He accomplished this despite several extended periods of incapacitation from his underlying medical encumbrance.

Bob's talents were manifest not only at his home institutions but nationally. He was a charter member and past president of the American College of Nuclear Physicians. He was active on a number of SNM committees and was a past president of the Midwest Chapter of the Society. He chaired the Nuclear Medicine Section of the Indiana State Medical Association in 1985 and 1986 and was a member of the executive board of the VA chiefs of nuclear medicine group from 1990 to 1992. He was the author of more than 50 articles and book chapters on a broad range of nuclear medicine topics. He was a leader nationally in establishing the efficacy of PET imaging. At the time of his death, he served on the editorial boards of 3 medical journals: *The Journal of Nuclear Medicine*, *Radiology*, and *Stroke*.

Bob is survived by his wife, Irene C. Cox Burt, 3 children, and 1 granddaughter. He was buried at Arlington National Cemetery in Virginia. Those of us who knew him as a scholar and gentleman are in awe of his accomplishments, especially when living with such health restrictions. He loved life, family, friends, and nuclear medicine and fought hard to the end to make the most of it all!

Henry N. Wellman, MD
Indiana University School of Medicine

This memorial, written by Henry N. Wellman appeared in *The Journal of Nuclear Medicine*, February, 2004 45:2:50N.

For many years, Indiana University has helped to create and maintain a medical school it sponsors at Moi University in Eldoret, Kenya. The radiology department became involved for the first time in 2001. Terry Wilken, M.D., the department's chief resident at the time, spent six weeks giving lectures to help broaden the school's radiology services and assessing the needs there. As the result of the success of that visit, in February 2003 Dr. Matthew Johnson was the department's first faculty member to visit Kenya. The department's ongoing relationship with the program at Moi University is being expanded by a visit in Indianapolis by a radiologist from Kenya who will come in the summer of 2004.

With a significant increase in clinical volume, everyone in the department has been working harder. Radiologists and staff personnel are busier than they were a year ago, and certainly much busier than five or 10 years ago. Clinical research continues in all of the sections. The department continues to have a strong commitment to interventional radiology research and neuroradiology research.

The Imaging Sciences division continues to receive strong departmental support as great progress has been made on the medical school campus to furnish space and the most modern equipment necessary to conduct important research. Under the leadership of Gary Hutchins, the research division opened new facilities in two new medical school buildings. In the Biotechnology Research and Training Center (BRTC), a \$26.9 million facility which opened in April 2003, several important programs, or cores, are in place. The In Vivo Imaging Core is involved in developing novel biomedical imaging modalities. PET/Net Indiana is also located in BRTC, a joint venture between the I.U. Department of Radiology and PET/Net Indiana company, which produces radiopharmaceuticals for Indiana hospitals and radiology centers. According to Dr. Hutchins, the PET/Net collaboration "enables the



Hee-Myung Park, M.D., 2004



Terry Wilken, M.D.



Matthew Johnson, M.D.

School of Medicine the use of a rare resource, the medical cyclotron, to support the clinical needs of patients throughout Indiana and the research needs of the I.U. School of Medicine.” The cyclotron is necessary to the production of radiopharmaceuticals for the advanced imaging of biological processes such as those used in PET scanners. Projects are also being explored with other pharmaceutical companies to provide PET imaging support for their development research programs.



Research II

In the Research II building, a new campus building completed in December 2002, the Imaging Sciences division has over 30,000 square feet of space. These research facilities include office and conference space, extensive chemistry and other laboratory space, and a new animal imaging laboratory. This laboratory provides PET, CT, and MR facilities, dedicated to imaging large and small animals. MR facilities include two 9.4 Tesla animal imaging devices, one a vertical bore and the other a horizontal bore.

Dr. Hutchins also serves as the director of the Indiana Center of Excellence in Biomedical Imaging (IN-CEBI), which is housed in Research II. The IN-CEBI conducts its own research efforts and supports the medical school’s interdepartmental research activities. Patient imaging suites in Research II, available to IN-CEBI give

researchers access to more advanced technology than that found in many hospitals. Ample space is provided in these suites for clinical trials of the radiopharmaceuticals developed in IN-CEBI labs and in the Biotechnology Research and Training Center.



Biotechnology Research and Training Center (BRTC)

Another area of research under IN-CEBI is the Interventional Radiology Research Laboratory, which centers on devising new less invasive technologies for the treatment of arterial disease, the management of dialysis access, and the formulation of less toxic chemotherapy for liver cancer.

Dr. Gordon McLennan, an assistant professor of radiology, directs the IRRL. Under his leadership for the past two years, the laboratory staff, which began with two radiology technologists, now has seven full-time employees, including two research fellows. Dr. McLennan has been appointed co-chairman of the Research Committee of the Society of Interventional Radiologists.

In 2003 Dr. Richard Gunderman succeeded Dr. Aslam Siddiqui as the medical student clerkship director, a position which Dr. Siddiqui had held since 1991. Medical school education continues to do well under the direction of Dr. Gunderman, who became the primary faculty member in that area when Dr. Stan Alexander left. A number of faculty work with Dr. Gunderman in teaching medical students. In addition, two residents who have been particularly committed to medical student education plan to stay on the faculty and teach. Darel Heitkamp will join the chest section in 2004 and Hal Kipfer will join the breast imaging section in 2005. In late 2003, Dr. Siddiqui took over as the director of the department's fellowship program, allowing Dr. Tarver more time to oversee residency program.

After more than a decade in the Allied Health School, the Radiologic Sciences Program, in 2002 again came under the management of the Department of Radiology. With Allied Health now responsible only for graduate school programs, all of the undergraduate programs returned to their clinical departments. The earliest graduates of radiology's technologist program earned a one-year X-ray certificate. Later, only degree students were admitted to the school, electing to earn an associate of science



degree in radiological technology or a Bachelor of Science degree in either nuclear medicine or medical imaging technology.

Darel Heitkamp, M.D.; Hal Kipfer, M.D.; and Kenneth Buckwalter, M.D. are enjoyed the July 2002 Resident Welcoming Picnic held on the lawn of the ERI building.

Emily Hernandez works at the view box with two students in the Radiologic Sciences Program.

As of the close of the 2003 academic year, associate degrees have been awarded to 758 students and bachelor degrees to 409. The school continues to be based in the Clinical Building, where renovation in the late 1990s expanded the program's space. Now the school has, in addition to a large classroom and a two-room X-ray teaching



laboratory, a conference room, a library, faculty offices, and support areas.

The Radiologic Sciences Program continues to grow under the able leadership of Emily Hernandez, who has been in charge of it for many years. A large number of her faculty have been with her for a long time. Currently on the faculty are Sarah Baker, Linda Cox, Suetta Kehrein, Judy Kosegi, Bruce Long, John Rafert, and Susan Robinson. With the transfer of this program back to the radiology department, and the relocation of the Imaging Sciences Division to the Research II and BRTC buildings, space became available in the Clinical Building for further expansion of the technologist program. A digital radiography system was installed, and there are plans to install additional training equipment.

Years ago, facilities for radiology procedures were limited to hospitals. Today the I.U. Department of Radiology provides full radiological services not only to the three hospitals that make up Clarian Health, but also to Wishard Health Services and the Richard L. Roudebush Veterans Administration Medical Center, and to the outlying community hospital, Johnson Memorial at Franklin. The radiology department now provides radiology services at many outpatient centers, including Clarian Health's eight Indianapolis beltway sites. In addition, Clarian Health is opening two new hospitals within the next two years, one in Avon and another at 116th and Meridian Streets. IRP will provide radiology services at these locations. In 2003 the department opened two new outpatient imaging centers. The National Institute of Fitness and Sport (NIFS) is located on the south side of the IUPUI campus adjacent to the White River. This is a partnership of the I.U. Department of Medicine, the I.U. Medical Group, and the Department of Radiology. It has focused on sports-related injuries,



The Clarian people mover, shown approaching a station on the IUPUI campus, is now a valuable addition to the campus.

executive medical screening, wellness, and weight loss. A second imaging center is at 103rd Street and Spring Mill Road on the north side of Indianapolis where the I.U. Medical Group and the Department of Medicine have outpatient

services. The new imaging centers focus on MRI and CT.

The hospitals and outreach clinics are now connected by PACS, making it possible for a radiologist at Methodist to read CTs from the V.A. or for someone at University to read chest X-rays from Johnson County or from one of the beltway sites. This convenience promotes efficiency and permits much more subspecialty coverage, leading to better patient care.

The department remains section based, with radiologists within a particular section able to go to another hospital when needed. However, having radiologists primarily stationed at specific hospitals also continues to be an advantage. Referring physicians appreciate knowing there is a point person that will be there day by day. While there is a movement of people, particularly in certain sections, geographic basing does add to the department's stability.

I.U. campus radiologists from all subspecialties have responded to the service needs at Methodist Hospital. The new monorail connecting Methodist Hospital with the university campus is a convenient way for radiologists to travel between campuses.

Dr. Jackson took on the interim chairmanship at a time of much growth and change within the department. Ongoing initiatives call for solutions which may be difficult to find. But, as she observes, solutions that seemed appropriate five or 10 or 20 years ago are no longer valid. Change is a way of life. Medicine in general and academic medicine, too, are not fixed in time. Some departments thrive on change; some fear it. Most, however, find they learn from it.

Dr. Jackson credits Dr. Cohen for his skill in empowering people with departmental responsibilities and for grooming future leaders. As the interim chairman, she appreciated this strong leadership in the department. IRP has its own board and works with section heads and geographic chiefs to deal with the clinical



Seven decades of leadership (l-r): Mervyn D. Cohen, M.B.,Ch.B., M.D. (chairman 1996-2002); John Campbell, M.D. (chairman 1955-1970); Eugene Klatte, M.D. (chairman 1971-1991); Valerie Jackson, M.D. (chair 2004-); Robert Holden, M.D. (chairman 1991-1995). Not pictured is the late Raymond Beeler, M.D. (chairman 1947-1954).

operations. IURA will continue to exist, making decisions concerning major financial expenditures of the endowment for teaching and research. The current executive committee is made up of the department chairperson; Dr. Gary Hutchins, vice chairman of research; Dr. Richard Gunderman, vice chairman of education; Dr. Kenneth Buckwalter, who serves as vice chairman of the clinical division; Thomas Gibbs, the executive director of IURA; and two elected members, Dr. Himanshu Shah and Dr. James Fletcher.

Nearly a century ago, Dr. Oscar Lindenmuth was operating the first X-ray laboratory at the Indiana University School of Medicine in Indianapolis. He was demonstrating to his students a radical method for imaging parts of the body. How would Dr. Lindenmuth react if he were here today and was told that he should use PACS for a report from a CT in a hospital across town? On the other hand, what would be the reaction of one of today's radiology residents if he or she were sent back in time to attend one of Dr. Campbell's Friday night film readings or to find a view box and type a report about the wet film hanging there?

Five chairmen have successfully helped shape the I.U. School of Medicine's Department of Radiology, making it an outstanding part of the school's operation – Raymond Beeler, John Campbell, Eugene Klatte, Robert Holden, and Mervyn Cohen. While their personalities, goals, working styles, and achievements have differed, each of these department leaders in his own way has made a valuable and lasting contributions to the advancement of academic radiology. Named chairperson in July, 2004, Dr. Valerie Jackson will make her own contributions as well.



Stories
and
Memories





“We’ve had some really good groups of residents come through. It seems each year there’s a little different tone from this collection of people, and most years by the end of that first orientation day, they’ve already jelled and sort of picked friendships. Maybe this first person is from Kentucky, and another person is from Tennessee, but they become lifelong friends. Then you see that happen without paying attention to it, on that very first day. They have different personalities, but they kind of gravitate toward each other. It’s kind of fun to see.”

Lois Shuman, Residency Coordinator
Joined IU Radiology in 1976



“Another memorable incident was in the blizzard of ’77. I was on call that night when the blizzard came in, and virtually no one made it in for the next couple of days. So I was the entirety of the Riley radiology staff for two days until – I think it struck on Wednesday night, and nobody could make it in until Friday afternoon. Of course, all the staff that was there – the technologists were stuck there. . . . They’d serve a lunch over at the University cafeteria. By the end of the week, the menu was becoming more and more imaginative.”



Donald Kreipke, M.D., Associate Professor
Joined IU Radiology in 1976



“How does nuclear medicine fit in? Is it a section, is it a division, is it a department, or what is it? Well, we always called ourselves up to that point – and I think there are some important in thinking through these organizations and relationships – that division is more of a semi-autonomous group than a section within a department. The section, they kind of share their equipment. You can do chest X-rays, you can do abdominal X-rays, you can do bone X-rays and so on with the same equipment. So they shared the same equipment. In nuclear medicine, we had to have our own equipment; we had to have our own radioisotopes and so on and so forth.”

Henry Wellman, M.D., Professor Emeritus
Joined IU Radiology in 1971



Stories and Memories

“Listening to Jack introduce his faculty and residents was one of the humorous parts of the meeting because he would always bungle it, and people would chide him. But it was actually – turns out in retrospect, it was a game that he played; it was something he did very intentionally. I didn’t really realize this, personally. I didn’t realize it though I guess a number of people knew it. I didn’t realize it until I was walking through the Dallas airport eight or nine years later, after Jack left. I was walking through the Dallas airport, and here’s Jack Campbell. My wife was with me. I walked up and I said, ‘Dr. Campbell, how are you?’ He said, ‘Oh, Don, how are you? How are the wife and kids?’ He didn’t even know I had kids. How did he know these things? But he did know them. And he knew my wife’s name. He did know them, and he remembered. But part of his persona, part of his stand-up comedy act was this little game he played with people’s names and where they came from and what they did.”



Donald Hawes, M.D., Associate Professor
Joined IU Radiology in 1968



“You know, I think the standard of care remained high. It didn’t matter whether you had just a little X-ray unit or you had a big, sophisticated, high-powered generator, we still kept good X-rays. We always had good patient care. We had good physicians, good staff, good technologists, good teachers. . . . I don’t think the standard of care changed. It’s just how we got there. The technology changed tremendously, but patients were served in the ‘60s just as they are in the 2000s now.”

Suetta Kehrein, R.T., Associate Professor
Joined IU Radiology in 1967



“We need to take seriously the educational mission because it’s in the process of educating physicians that so much of their aspirations and expectations are shaped. . . . We see radiology as a potential leader in trying to preserve and restore what’s best in American medicine – the leading system of medical education and research in the world. But if we don’t take the education of the next generation of physicians seriously and devote a lot of our time and effort to making that education as meaningful as possible, we’ll all suffer.”

Richard Gunderman, M.D., Ph.D., Associate Professor
Joined IU Radiology 1998



“It was a couple of years ago – maybe four years ago, I was a visiting professor out at Thomas



Jefferson at Philadelphia. Evening lecture and I was getting ready to get up. Introduction was made by the chairman of the department, and he said he was reading by CV and found it very unusual that I had spent my whole career at one institution. I was puzzled by that because I thought, ‘Why should I want to leave because I’m so happy here?’ So I found that peculiar. He said, ‘Well, most people move around.’ I didn’t see any reason why I’d want to move at all. I plan being here until I retire and spend the whole time in one building. If I’m here long enough, I’m sure to become an institution.”

Dewey Conces, M.D. , Professor
Joined IU Radiology in 1983



“A lot of us have been here for a long time, did residencies here and stayed on because we felt like this is – It’s a lot like a big family, more than just a working environment. People really care about you a lot. You feel like, you know, if you need something, people will step up to the bat and do whatever you need because we’re all in this together. People have always been treated fairly in the department.”

Valerie Jackson, M.D., Chair and Professor
Joined IU Radiology in 1982



“I am probably chief among Dr. Cohen’s fan club. I like him a lot. . . . He has brought a new flavor. I think he’s more willing to try new ideas, to investigate new ways of doing things. I’ve always said when you’re going to try new things, you’re going to hit a few home runs, and you’re going to make some mistakes. And I don’t expect him to be perfect, and I don’t expect every idea he has to be a home run. It has made it fun to work with him because he’s always exploring new ways of thinking about things.”

Mary Edwards-Brown, M.D., Professor
Joined IU Radiology in 1982

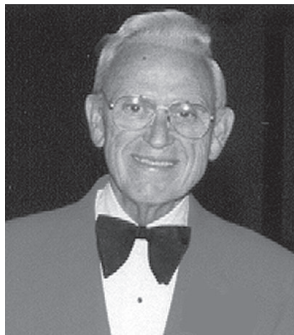


Stories and Memories

“Back in the ‘80s, when there was only one or two faculty here, that’s all they did, was clinical work. There wasn’t any established set-aside research program like there is now. People did research, but it was clinical research. It was kind of done on the side, after hours, on the weekends – those sorts of things. When I did my animal experiment as a resident, it wasn’t uncommon for me to be here until two in the morning – doing an experiment with Jerry Dreeson. Jerry and I would be here taking care of things. We did all our research scanning after hours. When the patients were done at ten or eleven o’clock at night, that’s when they let us on the scanner. Whereas, now, we have these dedicated research instruments where we do our research from eight to five; that’s really part of our job. As a result, we’re expected to go out and get funding and support it financially as well. And the department’s had the attitude that if you support research, it can be self sufficient from a financial point of view.”



Vincent Mathews, M.D., Professor
Joined IU Radiology 1986



“When I was offered the opportunity to go to Vanderbilt, I felt somewhat guilty about pulling out. I remember asking Dr. Campbell’s permission if I could go. His remark was that – ‘You can go but first you’ve got to find your replacement before you can leave.’ So I went out and looked, and Dr Taybi was chief of radiology at the University of Oklahoma at that time and a good friend and extremely competent radiologist. So Indiana University came out very well on that trade because he’s turned out to be one of the true greats in pediatric radiology.”

Eugene Klatte, M.D., Former Chair and Professor Emeritus
Joined IU Radiology in 1957



We spent a lot of time with clinicians, and that’s why the department was highly thought of. If you ask people who came here from other places or many of them volunteered and said to us that they had never had that kind of an association with a radiologist as a clinician as they had in our department. If you try to establish a good department of radiology in a hospital, it’s absolutely essential that these clinicians think highly of you and that you provide them with the kind of service that really is useful to them.



Vernon Vix, M.D., Professor Emeritus
Joined IU Radiology in 1974





“One time I had a graph made to explain to the resident applicants how our department grew in the first 10 years of Dr. Klatte’s era, from early 1970s to 1980s. It was really a very steep slope of growth, both in equipment and spaces and the budget cases handled during the year. It was a very, very steep growing curve. One thing that was attracting Dr. Klatte to come up here, one thing they had already started, to show the administration’s commitment to see that the radiology department was properly supported by the administration, was that the department already had the new quarters. It was not begun after Dr. Klatte’s arrival.”

Heun Yune, M.D., Professor Emeritus
Joined IU Radiology in 1971



Department
Group
Photographs





INDIANA UNIVERSITY MEDICAL CENTER

RADIOLOGY DEPARTMENT

FACULTY, RESIDENTS AND INTERNS

1974-1975

Front Row Evangeline Arhcer Guest, Gordon McLaughlin, William Cooper, Peter Scott, Chi Ryu, Ron Berg, J. Michael Phelps-Chief Resident, Heun Yune, E. C. Klatte-Chairman Bryan Burney, Jack Smith, Solomon Batnizky, Felipe Lim.

Second Row Pat Harper, John Lambertus, Jonathan Stafford, Michael Kavula, Martin Graham, Robert Woolfitt, Robert Burt, Henry Wellman, E. A. Franken, Charles Helman, Robert Holden, Russell Wigh.

Third Row James Guest, Ted Payne, Bob Anger, Benny Ko, Justin Wass Susanne Von Schuching, H. M. Park, Roscoe Miller John Robb, Glenn Moak, Yoon Kim, Richard Dieter.

Fourth Row Timothy Cloonan, John Pasalic, Victor Loouisin, William Elliott, Barry Blum, Skip Beltz, Jeff Weiss Gene Forry, Jerry Hulvat, Dick Gilmor, Randy Fields.

ABSENT: John Barnes, K. R. Reddy, Edward Cockerill
Vernon Vix, James Rogge

Department Group Photographs



1975

Row 1: Dr. Burt, Dr. Archer, Dr. Stafford, Dr. Holden, Dr. Robb, Dr. Klatte, Dr. Fields, Dr. Y. Kim, Dr. Wellman, Dr. Batnitzky, Dr. Ryu
 Row 2: Dr. T. Cloonan Sr., Dr. Woolfitt, Dr. Reddy, Dr. M. Baker, Dr. J. Chan, Dr. Kreipke, Dr. Fox, Dr. Lambertus, Dr. Guest, Dr. Stigall, Dr. Lappas, Dr. Scott, Dr. Oppenheim, Dr. A. Siddiqui, Dr. Richmond
 Row 3: Dr. Tashjian, Dr. Selink, Dr. H.M. Park, Dr. Regan, Dr. Trujillo, Dr. Lomax, Dr. Stokka, Dr. Hulvat, Dr. Wass, Dr. Peterson, Dr. Franken, Dr. Schauwecker, Dr. Zieverink, Dr. Bruns, Dr. Snyder, Dr. Burney, Dr. Moak
 Absent: Dr. Barnes, Dr. Berg, Dr. Cockerill, Dr. Graham, Dr. Harper, Dr. Kavula, Dr. R. Miller, Dr. J. Smith, Dr. W. Smith, Dr. Vix, Dr. von Schuching, Dr. Yune, Dr. Forry, Dr. Milos, Dr. Pak, Dr. Sequeira, Dr. Shidal, Dr. Tucker, Dr. Wuertz



D E P A R T M E N T O F R A D I O L O G Y 1 9 7 6

First Row: Lomac, Cooper, Stafford, Scott, Woolfitt, Klatte, Yune, Miller, Holden, Park

Second Row: Harper, Payne, Berg, Phelps, Beltz, Robb, Helman, Stigall, Tucker, Cockerill, Wellman

Third Row: Milos, Wass, B. Smith, J. Smith, Forry, Burney, Cloonan, Kim, Regan, Hulvat, Richmond

Fourth Row: Lambertus, Gilmor, Sequeira, Wuertz, Anger, Von Schuching, Kavula, Graham, Barnes, Zieverink, Vix, Weiss, McLaughlin, Moak

Not Photographed: Fox, Dieter, Burt, Archer, Guest, Franken, Fields, Ryu, Batnitsky, Keramati.



RADIOLOGY DEPARTMENT 1977

ROW ONE:

R.Burt, E.Archer, J.Stafford, R.Holden, J.Robb, E.Klatte, R.Fields, Y.Kim, H.Welman, S.Batnitzky, C.Ryu.

ROW TWO:

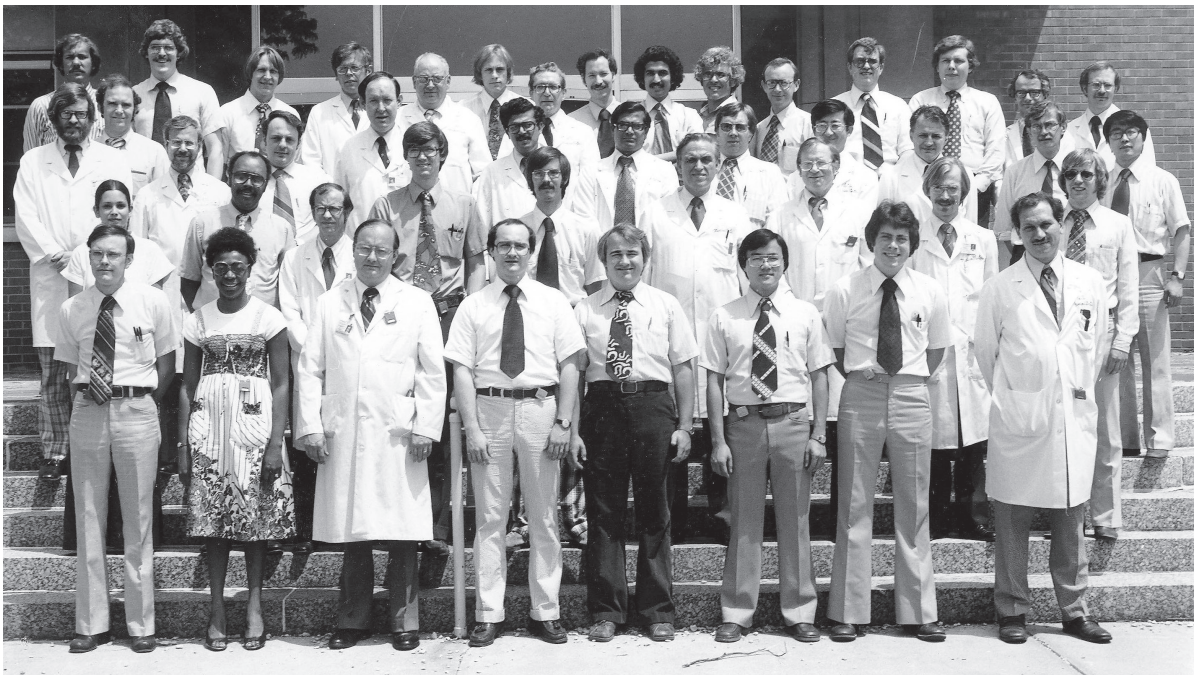
B.Richmond, A.Siddiqui, B.Oppenheim, P.Scott, J.Lappas, R.Stigall, J.Guest, J.Lambertus, M.Fox, D.Kreipke, J.Chan, M.Baker, K.R.Reddy, R.Woolfitt, T.Cloonan.

ROW THREE:

J.Tashjian, J.L.Sellink, H.Park, S.Regen, J.Trujillo, S.Lomax, C.Stokka, G.Hulvat, J.Wass, G.Peterson, E.Franken, D.Schauwecker, S.Zieverink, D.Bruns, E.Snyder, B.Burney, G.Moak.

MISSING:

Barnes, Berg, Cockerill, Graham, Harper, Kavula, Miller, J.Smith, W.Smith, Vix, von Schuching, Yune, Forry, Milos, Pak, Sequeira, Shidal, Tucker, Wurtz.



1978

Row 1: Dr. McLaughlin, Dr. P. Harper, Dr. Burt, Dr. Lappas, Dr. Fox, Dr. J. Chan, Dr. M. McCrea, Dr. Wellman

Row 2: Dr. Jackson, Dr. J. Smith, Dr. Wass, Dr. Stokka, Dr. Arfken, Dr. Klatte, Dr. Moak, Dr. Mock, Dr. Kreipke

Row 3: Dr. Weiner, Dr. Oppenheim, Dr. Schauwecker, Dr. Holden, Dr. Siddiqui, Dr. Reddy, Dr. Slabaugh, unknown, Dr. Vix, Dr. Franken, Dr. Pak

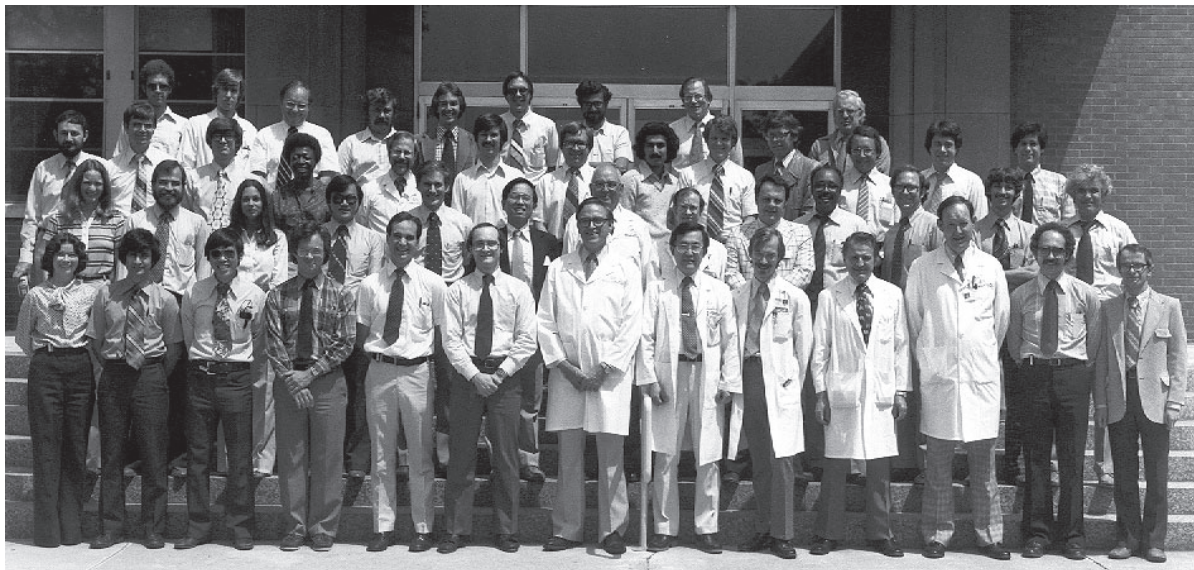
Row 4: Dr. Whitehead, Dr. Bartley, Dr. Wurtz, Dr. Lomax, Dr. Cockerill, Dr. Robb, Dr. Bruns, Dr. R. Miller, Dr. Conrad, Dr. Sequera, Dr. Trujillo, Dr. Snyder, Dr. Stigall, Dr. Tucker, Dr. Witt, Dr. Burney

Department Group Photographs



1979

Row 1: Dr. Whitehead, Dr. Morton, Dr. T. Mathews, Dr. Rabe, Dr. Becker, Dr. Lappas, Dr. Bartley, Dr. Franco, Dr. Kreipke, Dr. M. Baker, Dr. Klatte, Dr. H. Yune, Dr. R. Beeler, Dr. Bies
 Row 2: Dr. Greenman, Dr. V. Jones, Dr. Besozzi, Dr. Tashjian, Dr. Ellis, Dr. M. McCrea, Dr. Burt, Dr. Holden, Dr. Mock, Dr. Witt, Dr. W. Smith, Dr. H.M. Park
 Row 3: Dr. M. Fox, Dr. Richmond, Dr. Reider, Dr. Schauwecker, Dr. Gilmor, Dr. Wass, Dr. J. Chan, Dr. Robb, Dr. Moak, Dr. Oppenheim, Dr. Siddiqui, Dr. Frankin, Dr. Burney
 Row 4: Dr. Stokka, Dr. Lomax, Dr. Jackson, Dr. Trujillo, Dr. Sequeira, Dr. Stambuck, Dr. Snyder, Dr. Slabaugh, Dr. Appledorn, Dr. Cockerill, Dr. Wellman, Dr. Milos, Dr. Pak



1980

Row 1: Dr. Martin-Simmerman, Dr. Tashjian, Dr. Lee, Dr. Jones, Dr. Morton, Dr. Lappas, Dr. Klatte, Dr. Yune, Dr. Mock, Dr. Vix, Dr. Holden, Dr. Baker, Dr. Witt.
 Row 2: Dr. Uri, Dr. Bies, Dr. Jackson, Dr. Chan, Dr. Matthews, Dr. Park, Dr. Robb, Dr. Wass, Dr. Schauwecker, Dr. Smith, Dr. Baetley, Dr. Strickler, Dr. Trujillo.
 Row 3: Dr. Cohen, Dr. Harper, Dr. Stokka, Dr. Harper, Dr. Oppenheim, Dr. Arfken, Dr. Slaybaugh, Dr. Sequeira, Dr. Greenman, Dr. Cockerill, Dr. Rabe, Dr. McCrea, Dr. Reider,
 Row 4: Dr. Gunderman, I. Miller, Dr. Burt, Dr. Barnes, Dr. Beeler, Dr. Rust, Dr. Siddiqui, Dr. Moak, Dr. Franco.



1981

Row 1: Dr. Kreipke, Dr. Franco, Dr. Slabaugh, Dr. Klatte, Dr. Robb, Dr. Mock, Dr. I. Miller, Dr. Witt
Row 2: Dr. Arfken, Dr. V. Jones, Dr. J. Harper, Dr. J. Smith, Dr. Wass (hidden), Dr. Strickler, Dr. Moss, Dr. Yune
Row 3: Dr. M. Olson, Dr. Oppenheim, Dr. Appledorn, Dr. G. Becker, Dr. Burt, Dr. Cohen, Dr. M. Mullinix, Dr. P. Harper, Dr. O. Lee
Row 4: Dr. Holden, Dr. Conrad, Dr. J. Scott, Dr. Carr, Dr. H.M. Park, Dr. Rabe, Dr. Moak, unknown, Dr. Wellman
Row 5: Dr. Martin-Simmerman, Dr. Reider, Dr. Rust, Dr. Jackson, Dr. R. Beeler, Dr. Kopecky, Dr. Levan, Dr. M. Baker, Dr. Uri, Dr. Conces
Row 6: Dr. D. Barnes, Dr. D. Whitehead, Dr. E. Olson, Dr. Tarver, Dr. S. Siddiqui, Dr. Richmond, Dr. Cockerill, Dr. Morton



Bob Slabaugh, M.D. is shown with a belly dancer during a 1981 party at Riley.

Department Group Photographs



May 5, 1982

Front Row, Left to Right:
 R. Scales, R. Buck, D. Kuehn, P. Martin-Simmerman, L. McKinney,
 J. Wass, E. Klatte, R. Holden, E. Cockerill, R. Miller, S. Strickler

Second Row:
 M. Cohen, J. Moss, J. Smith, V. Jackson, J. Morton, J. Lappas,
 J. Reider, D. Kreipke, R. Rust, M. Olson, O. Lee, A. Levan,
 R. Gunderman

Third Row:
 M. Baker, D. Cory, V. Jones, F. Rabe, K. Kopecky, P. Rothschild,
 G. Conrad, I. Miller, J. Harper, E. Olson, G. Uri, N. Macdonald

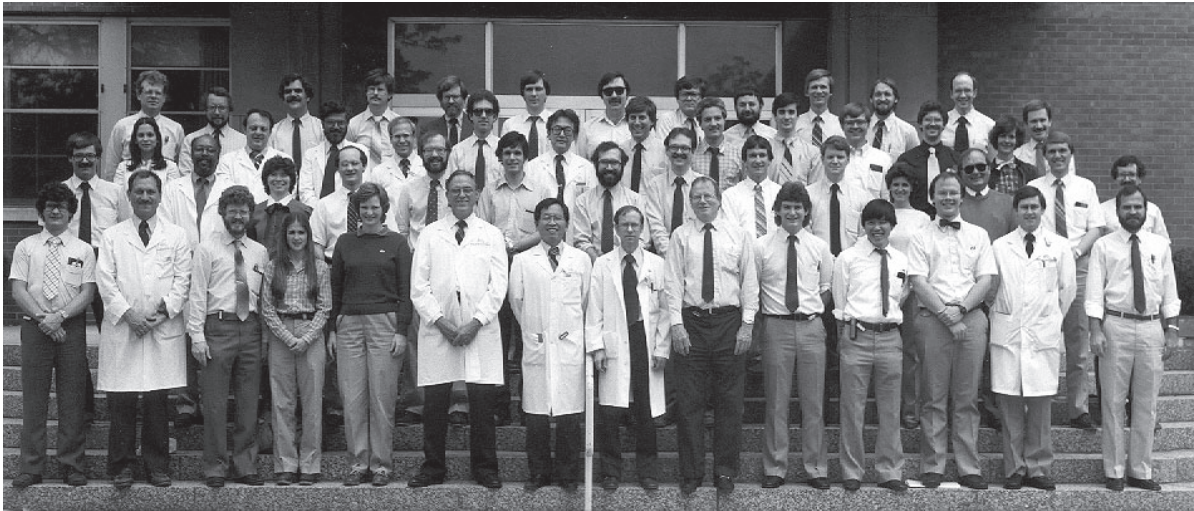
Fourth Row:
 L. Philippsen, A. Siddiqui, J. Bies, D. Barnes, E. Stambuk, G. Becker,
 D. Rowe, D. Conces, J. Scott, J. Mail, R. Reichter, R. Beeler, M.
 Mullinix, M. Edwards.

Not Present:

R. Appledorn, R. Burt, B. Carr, J. Ellis, J. Eskridge, R. Gilmor,
 G. Greenman, A. Harper, R. Lowe, G. Moak, B. Mock, B. Oppenheim,
 H. Park, B. Richmond, J. Robb, D. Schauwecker, R. Tarver, V. Vix,
 H. Wellman, R. Witt, H. Yune.



Joe Tashjian, M.D. (l), Donna Anderson (c), and Wilbur Smith, M.D. (r) enjoy a 1978 Christmas party in a Riley exam room.



1983
 Row 1: Dr. Doering, Dr. Wellman, Dr. Davis, Dr. McKinney, Dr. Uri, Dr. Klatte, Dr. Park, Dr. Wass, Dr. Moak, Dr. Gray, Dr. Lee, Dr. Tarver, Dr. Faris, Dr. Bies.
 Row 2: Dr. Conces, Dr. Smith, Dr. Martin-Simmerman, Dr. Lappas, Dr. Scales, Dr. Rees, Dr. Cory, Dr. Wenker, Dr. Kuehn, Dr. Greenman, Dr. Olson, Dr. Burt, Dr. Lowe, Dr. Ellis.
 Row 3: Dr. Jackson, Dr. Schauwecker, Dr. Siddiqui, Dr. Oppenheim, Dr. Gunderman, Dr. Yune, Dr. Eskridge, Dr. Rowe, Dr. Lavin, Dr. Mullinix, Dr. Strickler, Dr. Edwards.
 Row 4: Dr. Gilmor, Dr. Rabe, R. Appledorn, Dr. Richmond, Dr. Franklin, Dr. Olson, Dr. Reichter, Dr. du Cret, Dr. Cohen, Dr. Augustyn, Dr. Wehrenberg, Dr. Kopecky, Dr. Rothschild.
 Not Shown: Dr. Baker, Dr. Becker, Dr. Beeler, Dr. Carr, Dr. Cockerill, Dr. Franco, Dr. Holden, Dr. Hurwitz, Dr. Kreipke, Dr. Macdonald, Dr. Mail, Dr. Miller, Dr. Mock, Dr. Moss, Dr. M. Olson, Dr. Robb, Dr. Rust, Dr. Scott, Dr. Vix, Dr. Witt.

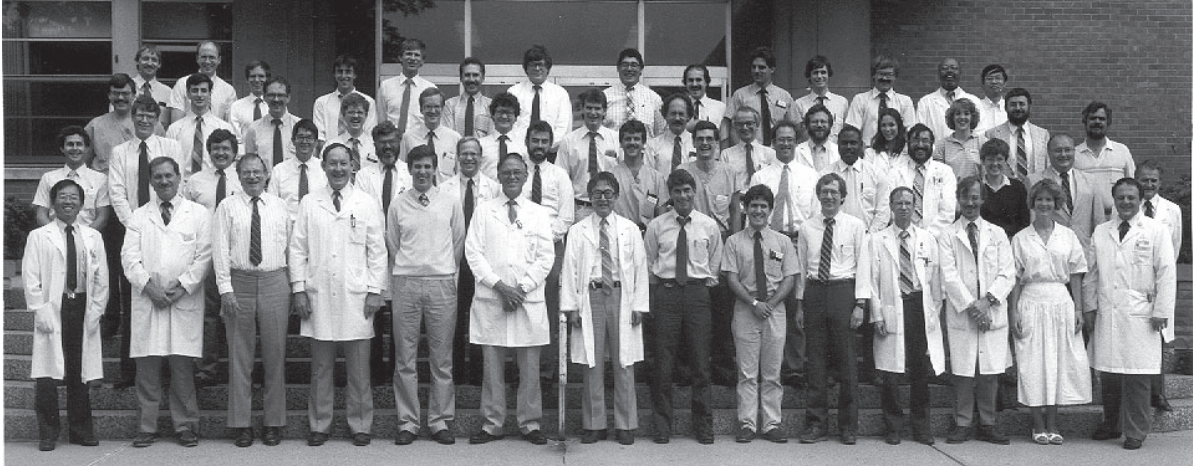


1984
 Row 1: Dr. R. Miller, Dr. Conces, Dr. Lappas, Dr. Wellman, Dr. Robb, Dr. H. Yune, Dr. Klatte, Dr. H.M. Park, Dr. R. Davis, Dr. Wehrenberg, Dr. Strickler, Dr. Mock
 Row 2: Dr. J. Faris, Dr. Moak, Dr. Petrich, Dr. McKinney, Dr. M. Olson, Dr. Rees, Dr. Ellis, Dr. Edwards, Dr. M. Mullinix, Dr. M. Hicks
 Row 3: Dr. B. King, Dr. Warner, Dr. Denham, Dr. M. Baker, Dr. Ducret, Dr. Reichter, Dr. Belt, Dr. Carr, Dr. Rothschild, Dr. Siddiqui
 Row 4: Dr. Augustyn, Dr. Schauwecker, Dr. Oppenheim, Dr. T. Lee, Dr. Lavin, Dr. Wenker, Dr. Rowe, Dr. Kopecky, Dr. Kuehn, Dr. Boyko, Dr. G. Becker, Dr. J. Scott



1985

Row 1: Dr. Doering, Dr. Merchun, Dr. D'Amour, Dr. Davis, Dr. Wass, Dr. Klatte, Dr. C. Gray, Dr. Buck, Dr. Moak, Dr. Belt
 Row 2: Dr. Kreipke, Dr. B. King, Dr. M. Hicks, Dr. Rippe, Dr. Fritsch, Dr. Gillespie, Dr. Robb, Dr. H.M. Park, Dr. Oppenheim, Dr. Petrich, Dr. Lin, Dr. Mock, Dr. Burt
 Row 3: Dr. Jackson, Dr. Rees, Dr. Boyko, Dr. R. Lowe, Dr. Benenati, Dr. Lavin, Dr. Eskridge, Dr. Wenker, Dr. E. Olson, Dr. Schauwecker, Dr. Siddiqui, Dr. J. Smith
 Row 4: Dr. D. Cory, Dr. Tatum, Dr. Rothschild, Dr. Kuehn, Dr. Denham, Dr. G. Becker, Dr. J. Mail, Dr. M. Olson
 Row 5: Dr. Lee, Dr. Augustyn, Dr. Scales, Dr. Reichter, Dr. Tarver, Dr. Cohen, Dr. Holden, Dr. Cockerill



1986

Row 1: Dr. H.M. Park, Dr. Wellman, Dr. Moak, Dr. Holden, Dr. Belt, Dr. Klatte, Dr. H. Yune, Dr. M. Hicks, Dr. Silver, Dr. Kreipke, Dr. Wass, Dr. Mock, Dr. Edwards, Dr. Schauwecker
 Row 2: Dr. Merchun, Dr. T. Lee, Dr. Klink, Dr. Rippe, Dr. Siddiqui, Dr. Oppenheim, Dr. Fritsch, Dr. Gillespie, Dr. Koch, Dr. D'Amour, Dr. Lucas, Dr. Weimer, Dr. Denham, Dr. Burt, Dr. Vix
 Row 3: Dr. Boyko, Dr. Lavin, Dr. Wenker, Dr. R. Davis, Dr. Bogan, Dr. Doering, Dr. C. Gray, Dr. M. Baker, Dr. Witt, Dr. Abrahams, Dr. Jackson, Dr. Ehrman, Dr. Cohen, Dr. Appledorn
 Row 4: Dr. Wehrenberg, Dr. Kopecky, Dr. Tatum, Dr. Schrodt, Dr. Augustyn, Dr. D. Cory, Dr. Ducret, Dr. Bognanno, Dr. Kuharik, Dr. Benenati, Dr. Rees, Dr. Conces, Dr. J. Smith, Dr. L. Lin



May 1987

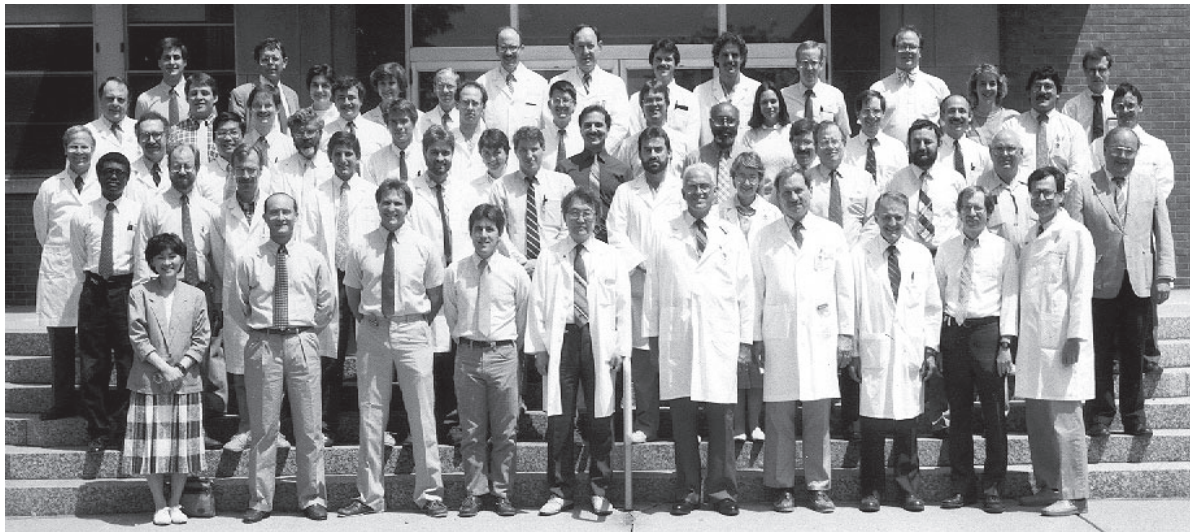
Front Row: Dr. Siddiqui, Dr. Cohen, Dr. Cory, Dr. Belt, Dr. Moak, Dr. Yune, Dr. Klatte, Dr. Wellman, Dr. Vix, Dr. Mock, Dr. Witt, Dr. Silver, Dr. Warner.

Second Row: Dr. Tuli, Dr. Petrich, Dr. Fritsch, Dr. Oppenheim, Dr. Park, Dr. Gillespie, Dr. Lucas, Dr. Mulry, Dr. Jackson, Dr. White, Dr. Conces, Dr. V. Harris.

Third Row: C.R. Appledorn, Dr. Kraft, Dr. Denham, Dr. Swan, Dr. Wass, Dr. Kreipke, Dr. Kuharik, Dr. Schrodt, Dr. Mathews, Dr. Don, Dr. Ehrman, Dr. T. Harris.

Fourth Row: Dr. Tatum, Dr. F. Lee, Dr. Holden, Dr. Cockerill, Dr. Burt, Dr. Schauwecker, Dr. Weiner, Dr. Mail, Dr. Tarver, Dr. Harrill.

Department Group Photographs



May 17, 1988

Front Row: Dr. Choi, Dr. Lappas, Dr. Micho, Dr. Silver, Dr. Yune, Dr. Klatte, Dr. Wellman, Dr. Vix, Dr. Kreipke, Dr. Braunstein.

Second Row: Dr. Reynolds, Dr. Swan, Dr. Mock, Dr. Littman, Dr. De Camp, Dr. F. Lee, Dr. Fritsch, Dr. S. White, Dr. Moak, Dr. Cohen, Dr. Robb, Dr. Burt.

Third Row: Dr. Oppenheim, Dr. Cory, Dr. Lin, Dr. Siddiqui, Dr. Arvin, Dr. V. Harris, Dr. Garagiola, Dr. Smith, Dr. H. White.

Fourth Row: Dr. Schauwecker, Dr. Lutz, Dr. Broome, Dr. Klink, Dr. D'Amour, Dr. Rippe, Dr. Ingham, Dr. Jackson, Dr. Tatum, Dr. Mulry, Dr. Bognanno, Dr. Broderick.

Fifth Row: Dr. Cassidy, Dr. Cockerill, Dr. Kraft, Dr. Harrill, Dr. Wass, Dr. Kopecky, Dr. Holden, Dr. Gillespie, Dr. Benenati, Dr. Bogan, Dr. Tarver, Dr. Ehrman, Dr. Mail.



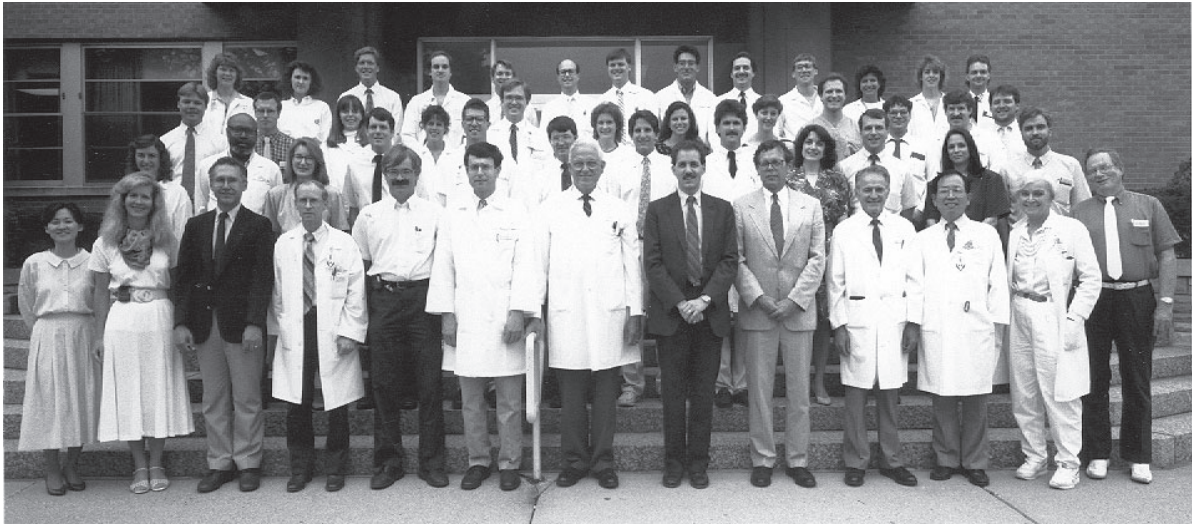
1989

Row 1: Dr. M. Baker, Dr. D. Cory, Dr. Moak, Dr. Lappas, Dr. Klatte, Dr. Campbell, Dr. Yune, Dr. A. Siddiqui, Dr. Lucas

Row 2: Dr. Walser, Dr. Mitchell, Dr. JS Swan, Dr. V Jackson, Dr. Harmon, Dr. Braunstein, Dr. White, Dr. R. Smith, Dr. Oppenheim, Dr. Mathews, Dr. J. Lutz, Dr. Bognanno

Row 3: Dr. H. Jones, Dr. K. Moran, Dr. Caldemeyer, Dr. Don, Dr. Ingham, Dr. E. Kim, Dr. H.M. Park, Dr. Littman, Dr. Klink, Dr. F. Lee, Dr. Mail, Dr. Rippe

Row 4: Dr. Conces, Dr. Brauning, Dr. Silver, Dr. Wells, Dr. Kopecky, Dr. Broome, Dr. Howards, Dr. Edwards, Dr. Cassidy, Dr. Garagiola, Dr. H. White, Dr. P. Sheets, Dr. Ehrman, Dr. Burton, Dr. T. Harris, Dr. J. Smith, Dr. Arvin, Dr. Cohen



1990

Row 1: Dr. R. Choi, Dr. Edwards, Dr. D. Cory, Dr. Wass, Dr. Conces, Dr. Braunstein, Dr. Klatte, Dr. Becker, Dr. Cockerill, Dr. Vix, Dr. H.M. Park, Dr. Kelly-Fry, Dr. Moak
 Row 2: Dr. V. Harris, Dr. J. Smith, Dr. S. White, Dr. Perkins, Dr. Janizek, Dr. Burton, Dr. Littman, Dr. Harmon, Dr. J. Kraft, Dr. Mathews, Dr. Jackson, Dr. DeCamp
 Row 3: Dr. Stockberger, Dr. Mail, Dr. Moran, Dr. Caldemeyer, Dr. Brendle, Dr. Mitchell, Dr. L. Wells, Dr. Harrill, Dr. Micho, Dr. Don, Dr. H. White, Dr. J. Lutz
 Row 4: Dr. Brauening, Dr. Clark, Dr. Walser, Dr. H. Jones, Dr. Sheets, Dr. Howard, Dr. Bognanno, Dr. Garagiola, Dr. T. Harris, Dr. Below, Dr. Ehrman, Dr. Vanbastelaer



1991

Row 1: Dr. Mail, Dr. Tarver, Dr. R. Smith, Dr. Buckwalter, Dr. Moak, Dr. Holden, Dr. Klatte, Dr. Braunstein, Dr. Yune, Dr. Witt, Dr. Mock, Dr. H.M. Park
 Row 2: Dr. Burt, Dr. Sheets, Dr. H. Reynolds, Dr. T. Harris, Dr. R. Choi, Dr. Broome, Dr. DeCamp, Dr. Siddiqui, Dr. Appledorn, Dr. M. Baker, Dr. Cohen, Dr. Alexander, Dr. Don
 Row 3: Dr. Littman, Dr. Stockberger, Dr. Syed, Dr. Harmon, Dr. Reed, Dr. J. Lutz, Dr. Caldemeyer, Dr. Ingram, Dr. Ballhagen, Dr. Burton, Dr. J. Smith, Dr. Jackson, Dr. S. Armstrong
 Row 4: Dr. Kraft, Dr. Elliott, Dr. DeGalan, Dr. Janizek, Dr. Wethington, Dr. Howard, Dr. Quets, Dr. Vanbastelaer, Dr. Murphy, Dr. Ehrman, Dr. Brendle, Dr. F. Lee, Dr. Below, Dr. Arvin, Dr. Walser, Dr. H. Jones, Dr. M. Hindi, Dr. Cockerill, Dr. S. Smith

Department Group Photographs



1992

Row 1: Dr. Walser, Dr. Ingram, Dr. Brengle, Dr. Kreipke, Dr. Holden, Dr. Wellman, Dr. Moak, Dr. Vix, Dr. Yune, Dr. Janizek

Row 2: Dr. Ivancevich, Dr. S. Armstrong, Dr. S. Smith, Dr. Alexander, Dr. Schauwecker, Dr. Siddiqui, Dr. Mock, Dr. Witt, Dr. Oppenheim, Dr. Syed

Row 3: Dr. Stockberger, Dr. H. Shah, Dr. K. Short, Dr. Reed, Dr. Harmon, Dr. Strzembosz, Dr. Caldemeyer, Dr. M. Baker, Dr. Arvin

Row 4: Dr. Brauening, Dr. Hawes, Dr. Perkins, Dr. Murphy, Dr. Wass, Dr. DeGalan, Dr. Quets, Dr. Bugaieski, Dr. V. Harris, Dr. Elliott, Dr. Carrico



1993

Row 1: Dr. Holden, Dr. Siddiqui, Dr. Schauwecker, Dr. Yune, Dr. Vix, Dr. Braunstein, Dr. J. Smith, Dr. R. Smith, Dr. Klatter, Dr. Stockberger

Row 2: Dr. Brumbaugh, Dr. Cohen, Dr. Oppenheim, Dr. H.M. Park, Dr. Wass, Dr. M. Wolfe, Dr. Ballhagen, Dr. Below, Dr. Brengle, Dr. Burton, Dr. Kennan, Dr. H. Jones

Row 3: Dr. Engelken, Dr. Elliott, Dr. Burt, Dr. Pak, Dr. V. Harris, Dr. Engle, Dr. Khamis, Dr. Perkins, Dr. S. Armstrong, Dr. Ingram, Dr. Piper, Dr. Bugaieski, Dr. Sheets

Row 4: Dr. Ivancevich, Dr. H. Shah, Dr. Barkmeier, Dr. Short, Dr. Fisher, Dr. George, Dr. Janizek, Dr. Wethington, Dr. Tarver, Dr. Moak, Dr. Brendle, Dr. DeGalan, Dr. Madden, Dr. Walser



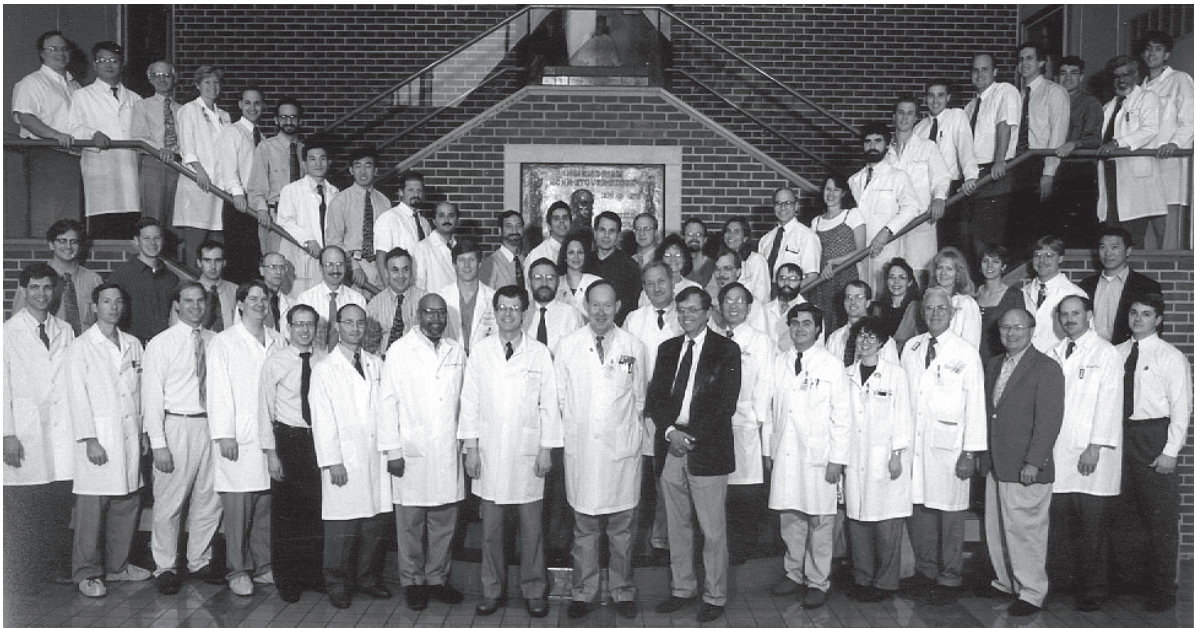
1994

Row 1: Dr. Wellman, Dr. Schauwecker, Dr. Wass, Dr. Edwards-Brown, Dr. Holden, Dr. H.M. Park, Dr. Yune, Dr. Vix, Dr. Klatte, Dr. R. Smith, Dr. Trerotola

Row 2: Dr. Braumbaugh, Dr. Snidow, Dr. Ivancevich, Dr. Jackson, Dr. Lappas, Dr. Siddiqui, Dr. terPenning, Dr. Kahmis, Dr. Brengle, Dr. Caldemeyer, Dr. Mogavero, Dr. K. Anderson, Dr. Conces

Row 3: Dr. Syed, Dr. Dorulla, Dr. Kriepke, Dr. Cohen, Dr. Piper, Dr. S. Armstrong, Dr. Below, Dr. Short, Dr. Moran, Dr. Madden, Dr. Oppenheim, Dr. George

Row 4: Dr. Hicklin, Dr. Fulton, Dr. Bugaieski, Dr. Fisher, Dr. Pak, Dr. M. White, Dr. Vaccaro, Dr. Tarver, Dr. Alexander, Dr. Basinski, Dr. Small, Dr. Engle, Dr. Salusbury, Dr. Kopecky, Dr. J. Carrico, Dr. C. Carrico, Dr. Barkmeier



1995

Row 1: Dr. Bugaieski, Dr. M. Johnson, Dr. DeGalan, Dr. Davenport, Dr. Kreipke, Dr. Lappas, Dr. J. Smith, Dr. Braunstein, Dr. Holden, Dr. Cockerill, Dr. Mulholland, Dr. Wolfe, Dr. Klatte, Dr. Burt, Dr. Hutchins, Dr. Bernauer

Row 2: Dr. J. Carrico, Dr. Basinski, Dr. Small, Dr. Wass, Dr. Kopecky, Dr. Aisen, Dr. Trerotola, Dr. Cohen, Dr. Wellman, Dr. Mock, Dr. H.M. Park, Dr. Heyde, Dr. Reilly, Dr. Dorulla, Dr. Edwards-Brown, Dr. K. Anderson, Dr. Stockberger, unknown

Steps (l-r): Dr. Tarver, Dr. Y.H. Park, Dr. Witt, Dr. Ingram, Dr. Engelken, Dr. Khamis, Dr. Hsu, Dr. Pak, Dr. Peeters, Dr. H. Shah, Dr. Zerlin, Dr. Abdullah, Dr. Jackson, Dr. Barkmeier, Saulsbury, Dr. Brumbaugh, Dr. Short, Dr. Madden, Dr. Oppenheim, Dr. Caldemeyer, Dr. Quets, Dr. Stine, Dr. Hicklin, Dr. Wheeler, Dr. Kramer, Dr. George, Dr. Siddiqui, Dr. M. White

Department Group Photographs



1996

Floor-left: Dr. Pak, Dr. Saulsbury, Dr. Schauwecker, Dr. Wass, Dr. Burt; right: Dr. Hari, Dr. Wellman, Dr. Klatte, Dr. Cockerill

Steps - down: Dr. Winkler, Dr. Walser, Dr. Bachman, Dr. Mulholland, Dr. J. Smith, Dr. White, Dr. Braunstein, Dr. Karmazyn, Dr. Edwards-Brown, Dr. Lappas, Dr. Trerotola, Dr. Jackson, Dr. Cohen, Dr. Mathews, Dr. Kopecky, Dr. Khamis, Dr. Mock, Dr. Bamford, Dr. Stockberger, Dr. Witt, Dr. Wolfe, Dr. Oppenheim, Dr. Basinski, Dr. C. Carrico

Steps - up: Dr. Alexander, Dr. D. Baker, Dr. Abdullah, Dr. Hemmerlein, Dr. Chee, Dr. Kreipke, Dr. Estrada, Dr. M. Johnson, Dr. Short, Dr. T. Lee, Dr. Glance, Dr. Hsu, Dr. Spero, Dr. Brumbaugh, Dr. Rose



1997

Row 1: Dr. Thimm, Dr. Basinski, Dr. Tim Cloonan, Dr. Cockerill, Dr. Jackson, Dr. Cohen, Dr. Karmazyn, Dr. Trerotola, Dr. Hawes, Dr. Burt, Dr. Digirolamo, Dr. Kopecky

Row 2: Dr. Stine, Dr. Spero, Dr. Fisher, Dr. K. Anderson, Dr. Bachman, Dr. D. Baker, Dr. Estrada, Dr. Sandrasegaran, Dr. Krejchi, Dr. Khamis, Dr. Loeffler, Dr. Skiles, Dr. Waldschmidt, Dr. Das, Dr. Stockberger
Steps - down: Dr. Tuttle, Dr. Braunstein, Dr. White, Dr. Kucera, Dr. Mathews, Dr. Shinaver, Dr. Greenspan, Dr. Edwards-Brown, Dr. Reilly, Dr. Abdullah, Dr. Hemmerlein, Dr. Zerlin, Dr. Wass, Dr. Siddiqui, Dr. Schauwecker, Dr. Oppenheim, Dr. J. Smith, Dr. Witt, Dr. Fulton, Dr. Dorulla, Dr. Hari, Dr. Hicklin



1998

Row 1: Dr. C. Poon, Dr. Caldemeyer, Dr. Pennington, Dr. Jackson, Dr. Cohen, Dr. Conces, Dr. Davenport, Dr. Cockerill, Dr. Kreipke, Dr. Lappas

Row 2: Dr. Swack, Dr. G. Smith, Dr. M. White, Dr. M. Phillips, Dr. Hawes, Dr. Hutchins, Dr. Broderick, Dr. Schauwecker, Dr. Burt, Dr. Zerlin, Dr. Thimm, Dr. P. McGraw, Dr. Abdullah, Dr. Reilly, Dr. Hagman, Dr. Cameron

Steps - down: Dr. Oppenheim, Dr. Witt, Dr. T. Lee, Dr. Z. Shah, Dr. Childress, Dr. Wheeler, Dr. Bachman, Dr. Hsu, Dr. Crow, Dr. Stockberger, Dr. Blahunka, Dr. D. Baker, Dr. Alexander, Dr. Mock, Dr. Wass, Dr. Mulholland, Dr. H.M. Park, Dr. Kopecky, Dr. J. Smith, Dr. K. Anderson, Dr. Richard Gunderman, Dr. Buckwalter, Dr. Sasadeusz



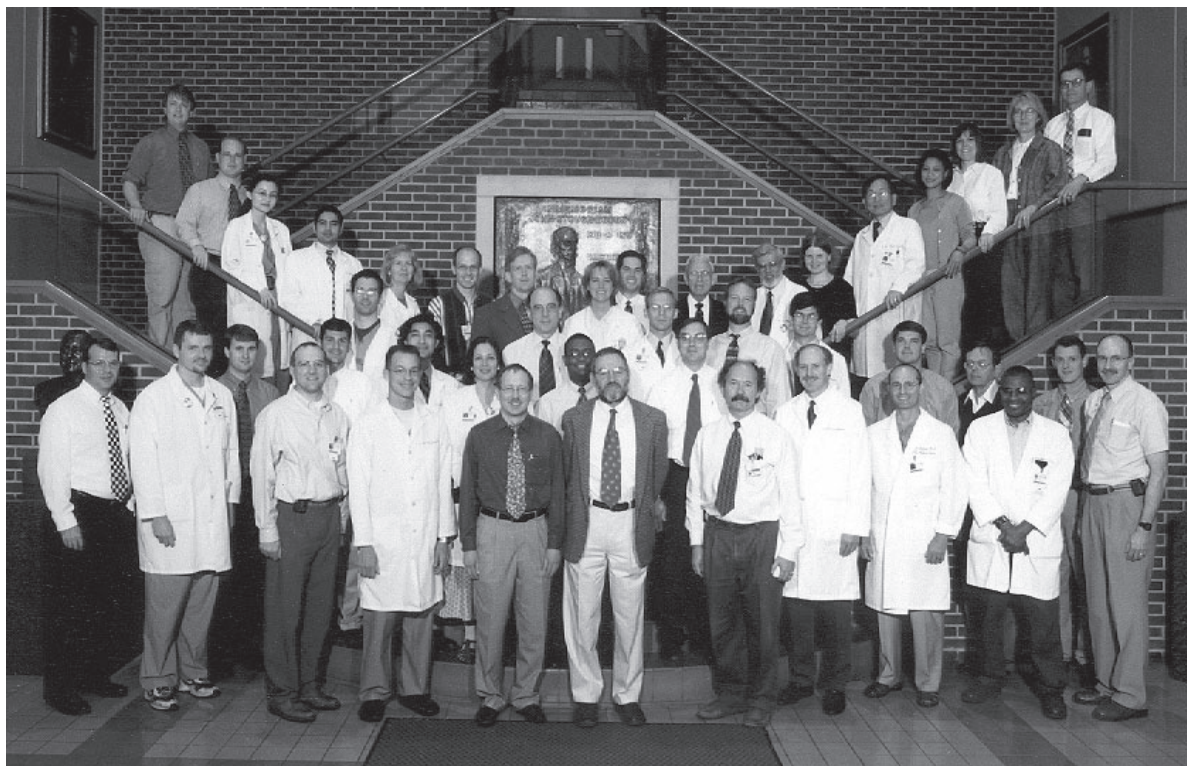
1999

Row 1: Dr. Bachman, Dr. S. Patel, Dr. Zerlin, Dr. Stockberger, Dr. Kreipke, Dr. J. Anderson, Dr. S. Hancock, Dr. Trerotola, Dr. Stookey, Dr. Rose

Row 2: Dr. Swack, Dr. D. Baker, Dr. Krumstok, Dr. Willson, Dr. Hemmerlein, Dr. Davenport, Dr. Fuchs, Dr. P. McGraw, Dr. Thimm

Steps - down: Dr. G. Smith, Dr. Poon, Dr. Crow, Dr. Jackson, Dr. Dhamecha, Dr. Mock, Dr. Blahunka, Dr. Cohen, Dr. Reeves, Dr. Hawes, Dr. Loeffler, Dr. Cockerill, Dr. J. Smith, Dr. H.M. Park, Dr. Siddiqui, Dr. M. Baker, Dr. Childress, Dr. Spero, Dr. Berry, Dr. Oppenheim

Department Group Photographs



2000

Row 1: Dr. Mathews, Dr. Hagman, Dr. G. Smith, Dr. Willson, Dr. Arbona, Dr. Stookey, Dr. R. Gupta, Dr. Jackson, Dr. Kriepke, Dr. H. Reynolds, Dr. Cohen, Dr. Jamieson, Dr. M. Baker, Dr. Hutchins, Dr. Lappas, Dr. P. McGraw, Dr. Cockerill, Dr. Kragha, Dr. Kuhlman, Dr. Kopecky

Steps - down: Dr. Bachman, Dr. Teague, Dr. E. Lee, Dr. A. Hashmi, Dr. Salis, Dr. Edwards-Brown, Dr. S. Baker, Dr. Richard Gunderman, Dr. H.R. Parvey, Dr. A. Crowley, Dr. D. Baker, Dr. Wilken, Dr. Klatte, Dr. Williamson, Dr. Siddiqui, Dr. Willing, Dr. Vanderwal, Dr. H.M. Park, Dr. Poon, Dr. Tuttle, Dr. S. White, Dr. Braunstein

Fellow Composites







SHERI ARMSTRONG



PEGGY BRENGLE



ERIC BUGAIESKI



MARK DEAN



MARK DeGALAN



KEVIN FROBERG



MITHAT HALIOGLU



ROBERT HEYD



BETH INGRAM



COLLEEN MADDEN



JEROME QUETS



MUBIN SYED

DEPARTMENT OF RADIOLOGY
FELLOWS

1994-1995

INDIANA UNIVERSITY SCHOOL OF MEDICINE



MARK BISESI



CARLA BRUMBAUGH



JAMES CARRICO



MARY DAVEY



FLORENCE GIN



HEMALATHA GOKHALE



SUSAN IVANCEVICH



BOAZ KARMAZYN



MIKE KHAMIS



YOUNG-HA PARK



HIMANSHU SHAH



KEVIN SHORT



MUBIN SYED



Timothy Carmody



Rhonda Counselman



Soumendu Das



Diane DiGirolamo



Georgia Dorulla



Michael Fisher



Stacy Greenspan



Boaz Karnazyn

**DEPARTMENT OF RADIOLOGY
FELLOWS**

1996-1997

INDIANA UNIVERSITY SCHOOL OF MEDICINE



Emily Kucera



Ryan Piper



Mark Redick



Kumaresan Sandrasegaran



Nazenin Shinaver



David Smith



MaryLynn Wolfe



KEVIN EDELMAN



DIANE DIGIROLAMO



CRAIG BRUNER



STEVEN C. BASINSKI



JEAN-MARTIN BALLARGEON



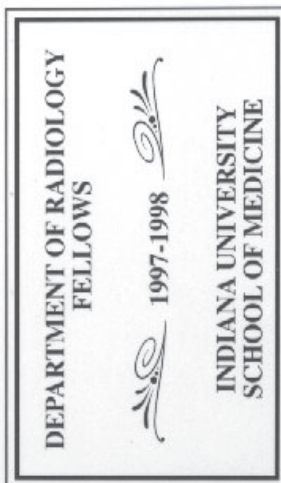
CARYN C. ANDERSON



RICHARD GUNDERMAN



STACY GREENSPAN



JEANETTE C. FULTON



MARK D. ESTRADA



BOKRAN WON



MATTHEW L. WHITE



STEPHEN B. STINE



KEVIN M. SMALL



CHRISTOPHER S. PEETERS



JOHN HILDEBRANDT



Neal Abdullah



Timothy Bernauer



William Berry



Sam Chee



Scott Childress



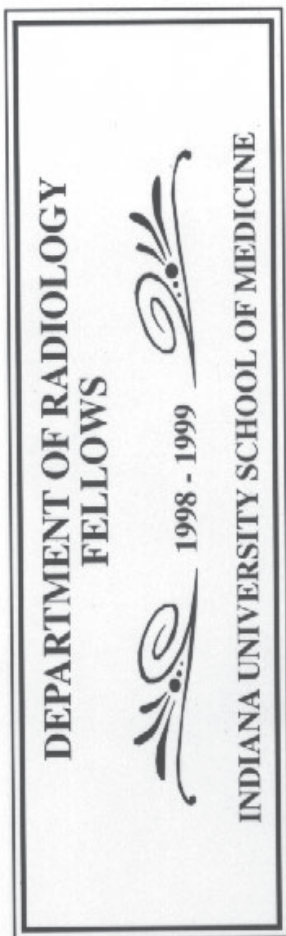
Robert Cook



Andrew Cox



Shamim Dada



Darren Davenport



Benjamin Krumstok



Natalie Ku



Mary Lesnfsky



Parvez Masood



Gordon McLennan



Clarence Reilly



Michael Wilson



Christopher Bachman



Douglas Baker



Anthony Eclavea



Jayesh Hari



Jeffrey Hemmerlein



Terry Lee



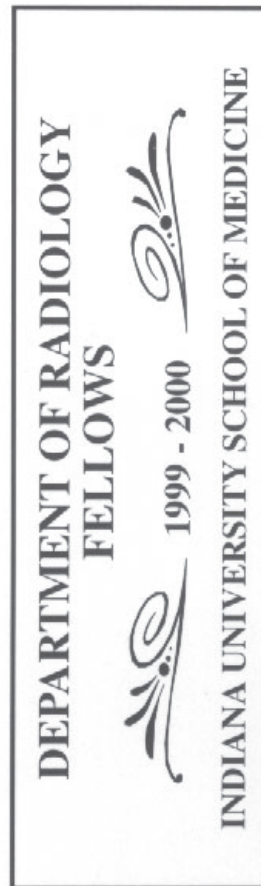
Gordian McLennan



Cheryce Poon



Ari Salis



Linda Tuthill



Alka Wells



Michael Willson



Todd Winkler



Edward Yang



Ravi Yarlagadda



David Agarwal



James Blahunka



Konstantin Chernukha



Timothy Cloonan



Keith Crow



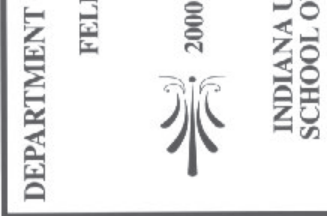
Anthony Eclavea



Jeffrey Hemmerlein



Elizabeth McGraw



Peter Stangas



Mark Tann



Hitesh Movalia



Samir Patel



Ari Salis



Zeeshan Shah



Todd Winkler



Todd Winkler



Todd Winkler



Todd Winkler





Sayed Ali



Ricardo Bracer



Bob Bretz



David Brummett



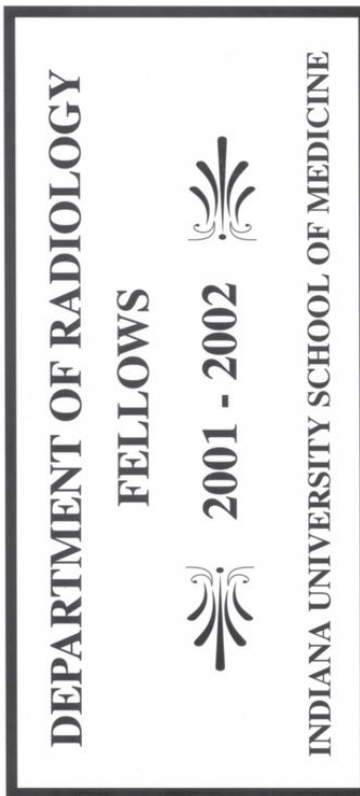
Shi-Yu Chen



Kok Chong



Robert Choplin



Barbaros Cil



Shamim Dada



V. Krishnamurthy



Raymonda Stevens



Michael Sze



Rajcev Anugu



Rupal Bandi



Rajesh Dhamecha



Maria Dolar



Victoria Edmond



Connie Gapinski



Grace Guo



Geoffrey Jones



Richard Kijowski



Francis Marshalleck



Juan Tejada



Jorge Medina



Sanjay Pathak



Ewa Plagman



Shane Rose





Abdelrahman Abdalla



James Anderson



Guillermo Arbona



Mark Coe



Brooks Davis



Michael Fuchs



Rajat Gupta



Tracy Martin

DEPARTMENT OF RADIOLOGY

FELLOWS

2003 - 2004

INDIANA UNIVERSITY SCHOOL OF MEDICINE



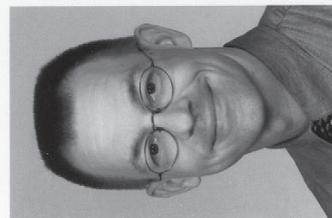
Frederick Origenes



Arumugam Rajesh



Babak Rejaie



Kenneth Stookey



Chewarat Wirojjananugoon



Wessam Bou-Assaly



Mark Coe



Erik Cressman



Chunli Deng



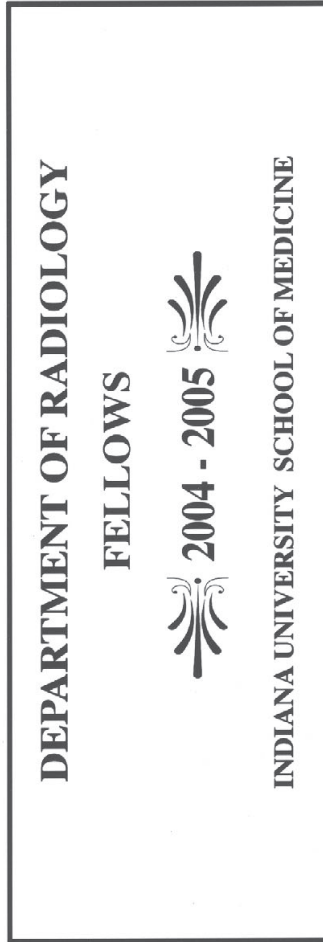
George Dunn



Bryan Hankins



Brad Johnston



Harpreet Judge



Matthew Lowery



Amr Mourad



Michael Stein



Steven Westphal




**Chewarat
Wiraitsornwong**

Resident Composites







1950 group photo of radiology residents featuring the Medical Center's director of hospital radiological services, Dr. Jack Campbell, holding a Coolidge Tube. (bottom l-r) Fred McCrea, M.D., Richard Datzman, M.D., Jack Campbell, M.D., James Lorman, M.D., and John W. Wilson, M.D. (top l-r) James Durlacher, M.D., John S. Scott, M.D., Donald Vivian, M.D., David Gastineau, M.D., and Ralph Levin, M.D.




STEPHEN J. REGAN



ROBERT W. STIGALL



TOM TUCKER




JOHN WUERTZ


Indiana University Medical Center

First Year Radiology Residents and Interns


1975-76




GUSTAVO ELIAS




SCOTT LOMAX




PEGGY MILOS





BRUCE D. RICHMOND





SARA ZIEVERINK



SU YUNG PAK



DONALD BRUNS


JOSEPH CHAN


MARK FOX



DONALD KREIPKE



JOHN LAPPAS



FRANKLIN SEQUEIRA


1976 - 77

INDIANA UNIVERSITY MEDICAL CENTER


WILLIAM SHIDAL


CAMERON STOKKA


JOSEPH TASHJIAN


JOSE TRUJILLO

RADIOLOGY RESIDENTS



TOBIN MATHEWS




GARY CONRAD



MARTIN BAKER



PETER ARFKEN






EDWARD BARTLEY



JAMES FENOGLIO



MICHEAL McCREA



DONALD SCHAUMECKER



EDWARD SNYDER













DANIEL WHITEHEAD



ROBERT SLABAUGH

Department of Radiology Indiana University School of Medicine Residents 1977 · 78

		<div><div>Department of Radiology</div><div>Indiana University</div><div>School of Medicine</div><div>Residents</div><div>1978-79</div></div>				
GORDON GREENMAN	VICTOR JONES			FRANK RABE	JEFFREY REIDER	EDGAR STAMBUK
						
GARY BECKER	JAMES ELLIS	JAMES FRANCO				
						
VALERIE JACKSON	JOHN MORTON					



BUCK BEELER



JOHN BIES



ROBERT GUNDERMAN



OWEN LEE



JOHN HARPER



N. L. MACDONALD

Department of Radiology
Indiana University
School of Medicine
Residents
1979-80



GWEN URI



BOB RUST



ELDON OLSON

DEPARTMENT OF RADIOLOGY
FIRST YEAR RESIDENTS 1980-81
INDIANA UNIVERSITY SCHOOL OF MEDICINE



Barbara Carr



Dewey Conces Jr.



Kenyon Kopecky



Phyllis Martin-Simmerman



Jack Moss



F. Michael Mullinix



Margret Olson



John Scott



Steven Strickler



Robert Tarver

DEPARTMENT OF RADIOLOGY

1ST YEAR RESIDENTS

1981-2

INDIANA UNIVERSITY SCHOOL OF MEDICINE



RICHARD BUCK



DAVID CORY



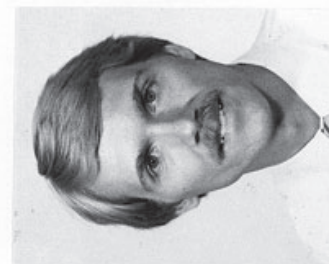
JOE ESKRIDGE



DOUG KUEHN



ANN MARIE LEVAN



RICK LOWE



JOHN MAIL



LUKE PHILIPPSEN



RUSSELL REICHTER



RICHARD SCALES

		<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>FIRST YEAR</p> <p>RADIOLOGY RESIDENTS</p> <p>INDIANA UNIVERSITY</p> <p>SCHOOL OF MEDICINE</p> <p>1982 - 1983</p> </div>		
				
				
				



Thomas Belt



Orest Boyko



Jan Denham



Cory Gray



Marshall Hicks



Bernard King

**DEPARTMENT OF RADIOLOGY
FIRST YEAR RESIDENTS
1983-84
INDIANA UNIVERSITY SCHOOL OF MEDICINE**



Ted Lee













Greg Merchun














Lesley Petrich

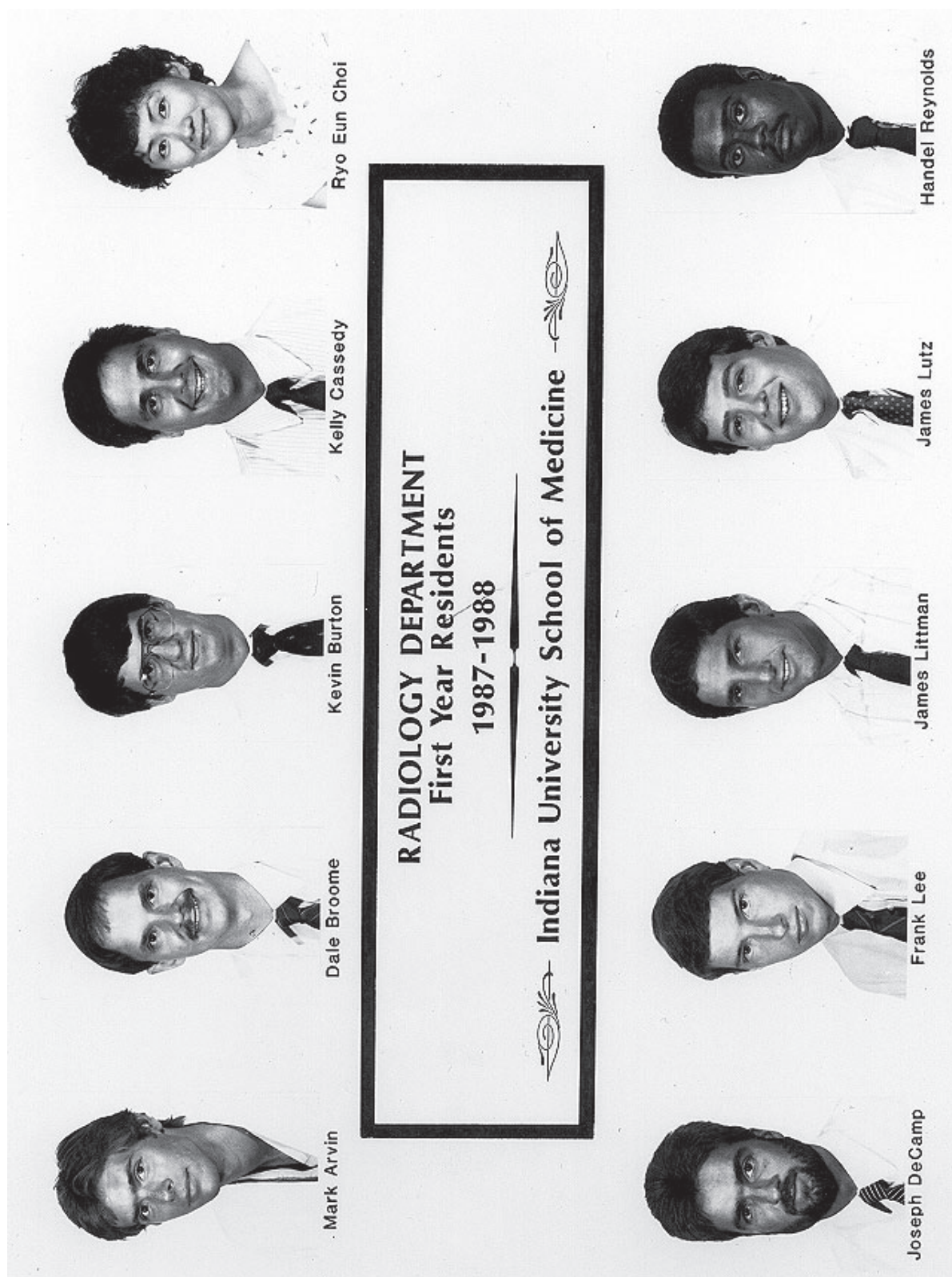


John Warner

					
James Benenati	Michael Bogan	Peter d'Amour	Kevin Gillespie	Kevin Koch	Clifton Tatum
<div style="border: 2px solid black; padding: 10px; text-align: center;"> <p>FIRST YEAR RADIOLOGY RESIDENTS</p> <p>1984-1985</p> <p>Indiana University School of Medicine</p> </div>					
					
Steven Fritsch	Lien Ching Lin	Elizabeth Pearcy	David Rippe		

			
James Bognanno	Duncan Brindley	Karen Ehrman	William Ingham
<div style="border: 2px solid black; padding: 10px; text-align: center;"> <p>FIRST YEAR RADIOLOGY RESIDENTS</p> <p>1985-1986</p> <hr style="width: 50%; margin: 0 auto;"/> <p>Indiana University School of Medicine</p> </div>			
			
J. Frederick Klink	Michael Kuharik	Jerome Schrodt	Douglas Silver
			
Daniel Lucas	Charles Mulry		

				
Steven Don	David Garagiola	Jon Harman	Connie Harrill	Todd Harris
<div style="border: 2px solid black; padding: 10px; text-align: center;"> <p>RADIOLOGY DEPARTMENT</p> <p>FIRST YEAR RESIDENTS</p> <p>1986-1987</p> </div>				
				
Jean Kraft				Veronica MacKenzie
				
Vince Mathews	Joseph Micho	J. Shannon Swan	Harold White	





Mary Braeuning

DEPARTMENT OF RADIOLOGY
1ST YEAR RESIDENTS
1988-9
INDIANA UNIVERSITY SCHOOL OF MEDICINE



Karen Caldemeyer



John Howard



Henry Jones



Edwin Kim



Jane Mitchell



Catherine Moran



Paul Sheets



Eric Walser



Lori Wells



Koreen Ballhagen



Mary Below



Michael Brendle



Eric Elliott



David Janizek



Thomas Murphy



Orrin Perkins

Department of Radiology
 1st YEAR RESIDENTS
 1989-90
 INDIANA UNIVERSITY SCHOOL OF MEDICINE



Stephan Stockberger



Frederic Vanbastelaer



Perry Wethington



Stanley Alexander



Sheri Armstrong



Eric Bugaleski



Mark DeGalan



Beth Ingram

Department of Radiology
 1st YEAR RESIDENTS
 1990-91
 INDIANA UNIVERSITY SCHOOL OF MEDICINE



Colleen Madden



Jerome Quets



Margaret Roll



Steven Smith



Mubin Syed



Jeffrey Barkmeier



Carla Brumbaugh



James Carrico



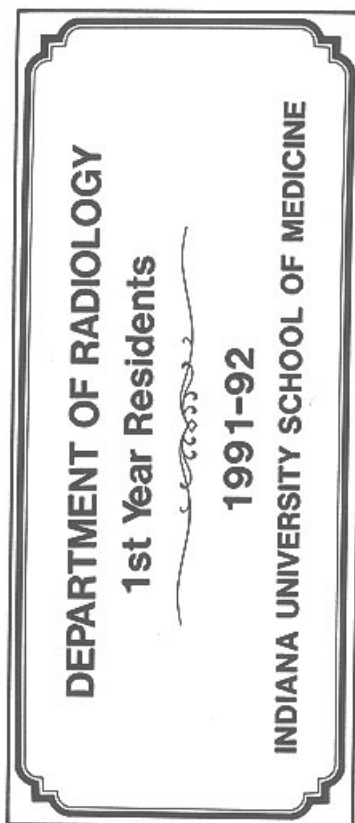
Jack Engelken



Hemalatha Gokhale



Susan Wancevich



Guy Kaissar



Michael Khamis



Himanshu Shah



Kevin Short



Benjamin Bamford



Caroline Carrico



Georgia Dorulla



Alan Engel



Michael Fisher



Micheal Kramer



Pyong Kon Pak



Ryan Piper



Steven Saulsbury



Jennifer Tribble



MaryLynn Wolfe

Department of Radiology



1st YEAR RESIDENTS

1992-93

INDIANA UNIVERSITY SCHOOL OF MEDICINE



JEFFREY HICKLIN



JOHN LINNETT



MATTHEW WHITE



MARK ESTRADA



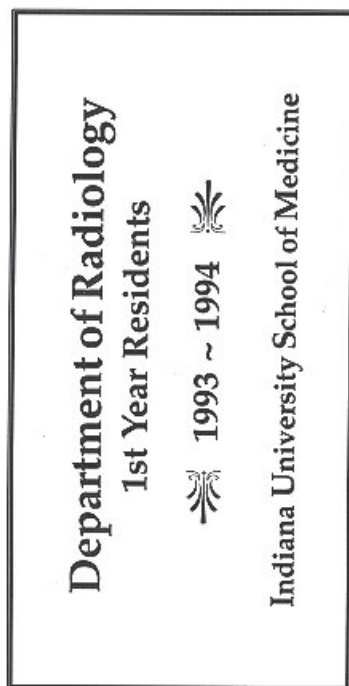
STEVEN BASINSKI



CARYN ANDERSON



JEANNETTE KUHN-FULTON



STEPHEN STINE



KEVIN SMALL



CHRISTOPHER PEETERS



NEAL ABDULLAH



CHRISTORH BERGMANN



TIMOTHY BERNAUER



SAM CHEE



SCOTT CHILDRESS

DEPARTMENT OF RADIOLOGY 1st YEAR RESIDENTS



1994-1995

INDIANA UNIVERSITY SCHOOL OF MEDICINE



DARREN DAVENPORT



TSE-CHUNG HSU



TONY KENDALL



CLARENCE R. REILLY



MICHAEL WHEELER



L. CHRIS BACHMAN



DOUG BAKER



JAYESH HARI



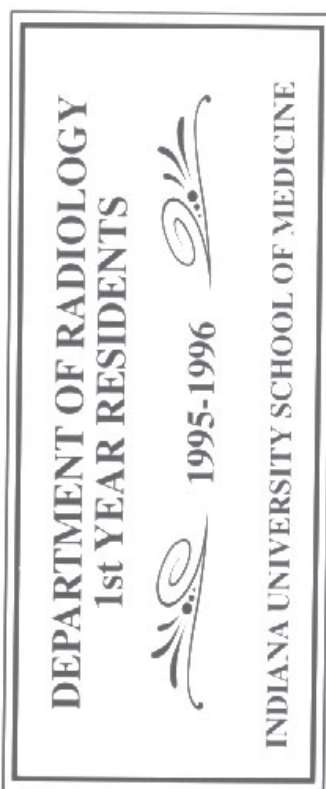
JEFF HEMMERLEIN



DAN KREJCHI



TERRY LEE



KENNETH SPERO



SENDHIL SUBRAMANIAN



LINDA TUTHILL



TODD WINKLER



James Blahunka



David Cameron



Tim Cloonan



Keith Crow



Paul Loeffler

DEPARTMENT OF RADIOLOGY
1st YEAR RESIDENTS

1996-1997
INDIANA UNIVERSITY SCHOOL OF MEDICINE



Samir Patel



Zeeshan Shah



William Skiles



Erwin Thimm



James Waldschmidt



THOMAS HAGMAN



DAVID HAHN



PETER MCGRAW

DEPARTMENT OF RADIOLOGY
1st YEAR RESIDENTS
1997-1998
INDIANA UNIVERSITY SCHOOL OF MEDICINE



KEVIN SASADEUSZ



GREGORY SMITH



MICHAEL SWACK



James Anderson



Rajesh Dhamecha



Victoria Edmond



Michael Fuchs



Sheryl Hancock



Son Nguyen

DEPARTMENT OF RADIOLOGY
1st YEAR RESIDENTS



1998 - 1999

INDIANA UNIVERSITY SCHOOL OF MEDICINE



Alan Reeves



Shane Rose



Kimberly Stigler



Kenneth Stookey



Ester van der Wal



Terrence Wilkin



Guillermo Arbona



Shane Baker



Danielle Bechert



Mark Coe



Anne Crowley



Brooks Davis



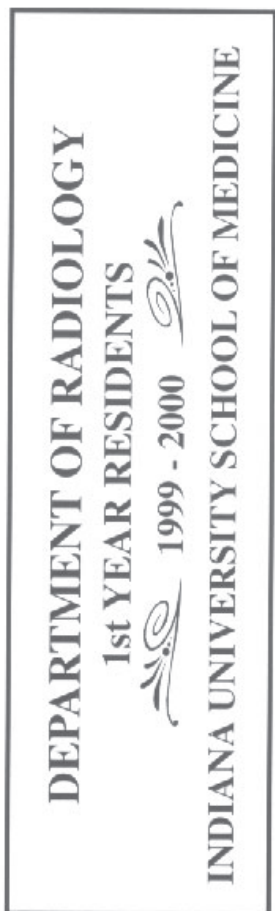
Rajat Gupta



Arouj Hashmi



Kayiguvwe Kragha



Chad Kuhlman



Emily Lee



Tracy Martin



Jason Mullnix



Frederick Origenes



Shawn Teague



John Alexander



William Betz



Erik Cressman



George Dunn



Scott Gaerte



Bryan Hankins



Darel Heitkamp



Kari Helms



Christine Huxol



Brad Johnston



Jay Jones



Fatima Kazem



Matthew Lowery



Michael Lutz



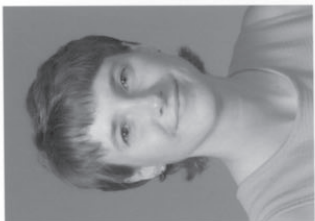







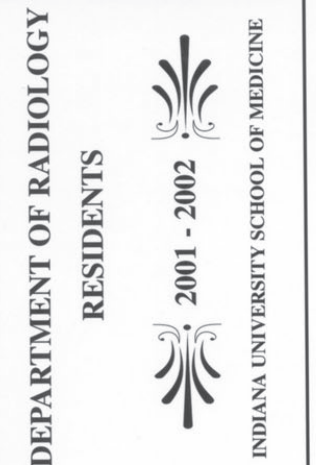








Michael Malis



Parvez Masood



Michael Stein

	Jody Barber		Kenneth Bowman		Daniel Bozarth		Michael Conley		Lisa Delaney		Chang Ho
	Hal Kipfer		Matthew Niemi						Aashish Patel		Nikiisa Rogers
	Avanee Shah		Noaman Siddiqi		Katherine Walker		Brian Wallace		Matthew Wanner		Michael Welling



Robert Andrews



Stephen Burky



Jeffrey Dunkle



K.C. Fahrbach



Kent Hansen



Dan Leatherwood



Shadie Majidi



Kellie McDonald



Darren O'Neill

DEPARTMENT OF RADIOLOGY

RESIDENTS



2002 - 2003

INDIANA UNIVERSITY SCHOOL OF MEDICINE



**Abdul-Rahman
Quadeer**



Maryam Rezvani



Terri Samuel



Matthew Shutske



John Sturgeon



Andrea Tompkins



Samuel Yu



Sandeep Ahluwalia



Grant Berges



Jennifer Connolly



Susan Crook



John Dohrman



Eric Edds



Joshua Garrett



Adam Gregory




Tamarya Hoyt

DEPARTMENT OF RADIOLOGY

RESIDENTS

2003 - 2004



INDIANA UNIVERSITY SCHOOL OF MEDICINE



Patrick Hurley



Catherine Kurowski



Jonathan Staser



Jeffrey Wichman



Eric Yeh



Van Young



Daniel Branam



Mark Ferrara



Christopher Fischer



Jason Ford



Aaron Hattaway



Marc Kohli



Shannon Kauffman



Omar Mahmood



Alan Northington



Shannon Powell



Ryan Steinbaker



Bilal Tahir



Stephen Wei



Amy Wisniewski



Eric Westin

Appendices



Department Chairmen and Chairwoman	275
Department Leadership, October 2004	276
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Faculty Through the Years: 1906 - 2004	279
Residents Through the Years: 1938 - 2004	282
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Department Chairmen and Chairwoman



Raymond Cole Beeler
1947 - 1951



John A. Campbell
1951 - 1971



Eugene C. Klatte
1971 - 1991



Robert W. Holden
1991 - 1996



Mervyn D. Cohen
1996 - 2002



Valerie P. Jackson
Interim 2003-2004
Chair 2004 -

Department leadership as of October 2004

Chairperson	Valerie Jackson, M.D.
Vice Chairman, Education	Richard Gunderman, M.D., Ph.D.
Vice Chairman, Research	Gary Hutchinson, Ph.D.
Vice Chairman, Clinical Affairs	Kenneth Buckwalter, M.D.

Abdominal Section Head	John Lappas, M.D.
Breast Section Head	Valerie Jackson, M.D.
Chest Section Head	Dewey Conces, M.D.
Emergency Radiology Section Head	Donald Hawes, M.D.
Interventional Radiology	Matthew Johnson, M.D.
Musculoskeletal Section Head	Kenneth Buckwalter, M.D.
Neuroradiology Section Head	Annette Johnson, M.D.
Nuclear Medicine Section Head	James Fletcher, M.D.
Pediatric Section Head	Richard Gunderman, M.D., Ph.D.
Residency Program Director	Robert Tarver, M.D.
Fellowships Director	Aslam Siddiqui, M.D.
Abdominal Fellowship Director	John Lappas, M.D.
Breast Fellowship Director	Zeeshan Shah, M.D.
Chest Fellowship Director	Dewey Conces, M.D.
General Radiology Fellowship Director	Shawn Teague, M.D.
IR Fellowship Director	David Agarwal, M.D.
Musculoskeletal Fellowship Director	Kenneth Buckwalter, M.D.
Neuroradiology Fellowship Director	Annette Douglas-Akinwande, M.D.
Nuclear Medicine Fellowship Director	Aslam Siddiqui, M.D.
Pediatric Fellowship Director	Richard Gunderman, M.D.
Radiologic Sciences Programs Director	Emily Hernandez, R.T.

Department Statistics as of October 2004

Hospitals	6
Outpatient Imaging Centers	12
Imaging Studies per year	550,000
Physician faculty	68
Research scientist faculty	23
Clinical Fellows	12
Residents	64

Current Physician Faculty as of October 2004 (71)*

Abdominal Imaging

Alex Aisen, M.D.
M. Fatih Akisik, M.D.
William Berry, M.D.
Richard Buck, M.D.
Rommel Dhadha, M.D.
Tariq Hameed, M.D.
Tina Harris, M.D.
Donald Hawes, M.D.
Frederick Kelvin, M.D.
John Knoté, M.D.
Chandana Lall, M.D.
John Lappas, M.D.
Dean Maglinte, M.D.
Jonas Rydberg, M.D.
Kumar Sandrasegaran, M.D.
Justin Wass, M.D.

Breast Imaging

Victoria Edmond, M.D.
Arouj Hashmi, M.D.
Valerie Jackson, M.D.
Barbara Savader, M.D.
Zeeshan Shah, M.D.

Chest Imaging

Dewey Conces, Jr., M.D.
Mark Frank, M.D.
Darel Heitkamp, M.D.
Robert Tarver, M.D.
Shawn Teague, M.D.

Emergency Radiology

Glenn Blackwood, M.D.
Karen Fitzgerald, M.D.
Richard Gilmor, M.D.
Donald Kreipke, M.D.
Bonnie Riley, M.D.

General Radiology

Brandon Chan, M.D.
Martin Goldstein, M.D.
David Goldenberg, M.D.
John Knoté, M.D.
H. Richard Parvey, M.D.

Interventional Radiology

David Agarwal, M.D.
Sabah Butty, M.D.
Thomas Casciani, M.D.
Matthew Johnson, M.D.
Geoffrey Jones, M.D.
Francis Marshalleck, M.D.
Gordon McLennan, M.D.
Jan Namyslowski, M.D.
Scott Savader, M.D.
Himanshu Shah, M.D.
Michael Stecker, M.D.

Musculoskeletal Imaging

Kenneth Buckwalter, M.D.
Robert Choplin, M.D.

Neuroradiology

Eric Awwad, M.D.
Maria Dolar, M.D.
Annette Douglas-Akinwande, M.D.
Mary Edwards-Brown, M.D.
Donald Hardman, M.D.
Annette Johnson, M.D.
Andrew Kalnin, M.D.
Juan Tejada, M.D.
Steven Willing, M.D.

Nuclear Medicine

Mark Estrada, M.D.
James Fletcher, M.D.
Donald Schauwecker, M.D., Ph.D.
Aslam Siddiqui, M.D.
Mark Tann, M.D.

Pediatric Radiology

Kimberly Applegate, M.D.
Mervyn Cohen, M.B.Ch.B., M.D.
Donald Corea, D.O.
Richard Gunderman, M.D. Ph.D.
Boaz Karmazyn, M.D.
Eugene Klatte, M.D.
John Smith, M.D.
Brian White, M.D.

**Includes Volunteer faculty
who are members of Indiana
Radiology Partners.*

Justin Wass, M.D. in 2000.



Current Non-Physician Faculty as of October 2004 (19)*

Andriy Babsky, Ph.D.

Navin Bansal, Ph.D.

Timothy R. DeGrado, Ph.D.

Toshihiko Hara, M.D., Ph.D.

Khan Hekmatyar, Ph.D.

Gary D Hutchins Ph.D.

Tie-Qiang Li, Ph.D.

Yun Liang Ph.D.

Michael Miller, Ph.D.

Bruce H. Mock Ph.D.

Evan Morris, Ph.D.

Kristine Mosier, D.M.D., Ph.D.

Ned C. Rouze, Ph.D.

Keith Stantz, Ph.D.

Ji-Quan Wang, Ph.D.

Yang Wang, M.D.

Kenneth B. Williamson, Ph.D.

Robert M. Witt, Ph.D.

Qi-Huang Zheng, Ph.D.



Current Radiologic Sciences Programs Faculty as of October 2004 (8)*

Sarah Baker, Ed.D.

Linda Cox

Angie DeVore

Emily Hernandez

Suetta Kehrein

Bruce Long

John A. Rafert

Susan Robinson

Faculty Through the Years

Faculty who began prior to 1950

Note: Those in italic added from history text.

Began Name (Ended)

(1906) *E. Oscar Lindenmuth (1919)*
 (1909) *Albert M. Cole (unknown)*
 1919 Raymond Beeler (1976)
 1925 (1921) Lester Smith (1958)
 (1926) *James Collins (unknown)*
 (1928) *Cecil Wright (1939)*
 (unknown) *William H. Kennedy (unknown)*
 (unknown) *Chester A. Stayton Sr. (unknown)*
 1931 (1925) Ralph Lochry (1956)
 (unknown) *Harold C. Oschsner (unknown)*
 (1934) *Helen Crawford (1943)*
 1936 Clifford Taylor (1977)
 (1939) *Arthur Echternacht (unknown)*
 1941 John Campbell (1971)
 (1941) *Marvin Hall (1942)*
 (1943) *John Robb (1985)*
 1946 Ralph Levin (Unknown)
 (unknown) *William Loehr*

Faculty who began 1950 – May 1971

Began Name (Ended)

1950 Samuel Morchan (1972)
 1951 Maurice Manalan (deceased 1967)
 1951 Howard Rothring (1952)
 (1952) *David Gastineau (unknown)*
 1952 William Tosick (1978)
 1953 William Jeffrey Little (1958)
 1954 Harold Griffith (1955)
 (1954) *James Lorman (unknown)*
 1954 Charles Smith (1956)
 1955 Edwin Libbert (Unknown)
 1956 Roscoe Miller (deceased 1984)
 (1956) *Deward Peterson (unknown)*
 1957 Paul Harding (1958)
 1959 Jesshill Love (1960)
 1959 Charles Helmen (1976)
 1961 Felix Pircher (1962)
 1962 Rodney Million (1964)
 1962 Phillip Sisk (1964)
 1962 Hooshang Taybi (1964)
 1963 Gerald Kurlander (1967)
 1967 Edmund Franken (1979)
 1968 Edward Cockerill (Retired 2000)
 1969 Anastacio Ng (1970)
 1970 Folke Brahme (1972)
 1971 H. Joseph Cronin (1973)

Faculty who began July 1971 – 1992

Began Name (Ended)

1971 Eugene Klatte (Retired 1993)
 1971 Heun Yune (Retired 1994)
 1971 Henry Wellman (Retired 1997)
 1972 Elizabeth Kelly-Fry (1992)
 1972 John Smith (Retired 2001)
 1972 Russell Wigh (1978)
 1972 Theodore Megremis (2002)
 1972 Chi Ryu (1977)
 1972 Robert Burt (Retired 2001)(deceased 2003)
 1972 Thomas Franklin, Jr. (1990)
 1973 Robert Holden (Retired 2002)
 1973 Hee-Myung Park (Retired 2003)
 1974 Glenn Moak (Retired 1994)
 1974 Vernon Vix (Retired 1994)
 1974 Solomon Batnitzky (1977)
 1974 Theodore Payne (1976)
 1974 Justin Wass
 1975 Ramachandra Reddy (1978)
 1975 Wilbur Smith (1980)
 1976 James V. Faris (1999)
 1976 A. Patricia Harper (Romilly) (1982)
 1976 Bernard Oppenheim (Retired 2001)
 1976 Aslam Siddiqui
 1977 C. Robert Appledorn (2000)
 1977 Richard Gilmor
 1977 Peter Scott (1981)
 1977 Robert Witt
 1977 Bruce Mock
 1978 Andrea Browne (1982)
 1978 Michael Besozzi (1980)
 1980 Mervyn Cohen
 1980 Gary Conrad (1982)
 1980 Donald Kreipke
 1980 John Lappas
 1980 Tieh-Liang Chang (1981)
 1981 Martin Baker (2000)
 1981 Gary Becker (1990)
 1981 James Franco (1983)
 1981 Gordon Greenman (1983)
 1981 Donald Schauwecker
 1982 Mary Edwards-Brown
 1982 Valerie Jackson
 1982 John Bies (2002)
 1982 James Ellis (1984)
 1983 Dewey Conces, Jr.
 1983 Eldon Olson (1985)
 1983 Dean Maglinte
 1984 Margaret Olson (1985)
 1984 Robert Tarver
 1985 Tod Abrahams (1986)
 1985 Gary Augustyn (1987)

Appendices: Faculty Through the Years

1985	David Cory (1990)	1999	Marshall Grillo (2000)
1985	Kenyon Kopecky (2002)	1999	Patrick Jamieson (2002)
1985	John Mail (1991)	1999	Michael Stecker
1985	John Scott (1987)	1999	J Shannon Swan (2003)
1987	Ethan Braunstein (2000)	1999	William Kiser, Jr (2000)
1987	Susan White (2000)	1999	Clarence Reilly (1999)
1988	Michael Bogan (1990)	1999	Jonas Rydberg
1988	James Bognanno (1990)	1999	Steven Willing
1988	Richard Smith (2000)	1999	Qi-Huang Zheng
1989	Jean Kraft (1991)	2000	H. Richard Parvey
1989	Kenneth Buckwalter	2000	Kenneth Williamson
1990	Mark Arvin (1992)	2000	Helen Winer-Muram (2004)
1990	Steven Don (1993)	2000	John Knot (2003)
1990	Jon Harman (1992)	2000	Cristopher Meyer (2002)
1991	Veronica Harris (1996)	2000	Keith Crow (2002)
1991	Henry Jones (1993)	2000	Gordon McLennan
1991	Handel Reynolds (2002)	2000	Zeeshan Shah
1991	Eric Walser (1993)	2000	Joshua Farber (2004)
1992	Donald Hawes	2000	Jin Ok Choi (2002)
1992	Pingyu Liu (1999)	2000	Yang Wang
1992	Karen Caldemeyer (2002)	2001	Annette Johnson
1992	Gary Hutchins	2001	Xuan Liu (2002)
1992	Catherine Moran (1995)	2001	Donald Corea

Faculty who began 1993 – 2002

Began	Name (Ended)		
1993	G. Keith Mulholland (2003)	2001	Eric Awwad
1993	Yanmin Huang (1996)	2001	David Agarwal
1993	John Snidow (1996)	2001	Tariq Hameed
1993	Stephan Stockberger (2000)	2001	Kimberly Applegate
1993	Buckley terPenning (1995)	2001	Mark Frank
1993	Scott Trerotola (2001)	2001	Tie-Qiang Li
1993	J. Michael Zerlin (2000)	2001	Jeniece Nott (2003)
1994	Richard Buck	2001	Mary Nicholson (2003)
1994	Alex Aisen	2001	James Fletcher
1994	Stanley Alexander (2002)	2002	Keith Stantz
1994	Lynn Broderick (1998)	2002	Robert Choplin
1994	Matthew Johnson	2002	Sabah Butty
1995	Hemalatha Gokhale (2001)	2002	Todd Winkler (2004)
1995	Vincent Mathews (2003)	2002	Navin Bansal
1996	Himanshu Shah	2002	Thomas Casciani
1996	Susan Ivancevich (2002)	2002	Timothy DeGrado
1996	Yun Liang	2002	Mark Tann
1996	Jan Namyslowski	2002	M. Fatih Akisik
1997	Mark Lowe (2003)	2002	William Berry
1997	Richard Gunderman	2002	Glenn Blackwood
1997	Joseph Lurito (2002)		
1997	Kenneth Moresco (2000)		
1997	Nilesh Patel (2002)		
1997	Micheal Phillips (2002)		
1997	Debra Pennington (1999)		
1997	Tao Li (1999)		
1998	Ned Rouze		
1998	Radhika Srinivasan (2000)		
1999	Iftikhar Ahmad (2004)		
1999	Mario Dziedzic (2003)		

Faculty who began 2003 – 2004

Began Name (Ended)

2003	Andriy Babsky
2003	Brandon Chan
2003	Maria Dolar
2003	Annette Douglas-Akinwande
2003	Mark Estrada
2003	Karen Fitzgerald
2003	Connie Gapinski (2004)
2003	Richard Gilmor
2003	Donald Hardman
2003	Tina Harris
2003	Arouj Hashmi
2003	Anna Illner
2003	Geoffrey Jones
2003	Andrew Kalnin
2003	Frederick Kelvin
2003	Chandana Lall
2003	Francis Marshalleck
2003	Michael Miller
2003	Kristine Mosier
2003	Bonnie Riley
2003	Barbara Savader
2003	Scott Savader (2004)
2003	John Scott
2003	Shawn Teague
2003	Ji-quan Wang
2004	Darel Heitkamp
2004	Juan Tejada

Residents Through the Years

(Chief Resident is in italic>

Began 1938

1938 1941 Marvin Hall

Began 1941

Irwin Floyd Winter

Began 1942

1942 1944 Charles F. Roland

Began 1944

1944 1947 Adron A. Sullenger

Began 1945

1945 1948 Jack Loudermilk

1945 1948 Willard C. Smullen

Began 1946

1946 1949 Warren E. Fischer

1946 1949 William Gallo

1946 1949 John W. Little

Began 1947

1947 1950 Richard C. Datzman

1947 1950 Maurice Manalan

1947 1950 O. Raymond Russell

Began 1948

1948 1949 Wallace Childs

1948 1951 James Durlacher

1948 1951 James Lorman

1948 1951 Philip B. Lockhart

1948 1951 John S. Scott

1948 1951 George W. Smith, Jr.

Began 1949

1949 1952 David C. Gastineau

1949 1952 William Little

1949 1952 Fred McCrea

1949 1952 Ernest Price

1949 1951 John S. Scott

1949 1952 John Wesley Wilson

Began 1950

1950 1953 William Lloyd Bridges

1950 1951 Richard A. Silver

1950 1952 Donald E. Vivian

Began 1951

1951 1954 Basil Dulin

1951 1954 John Champion

1951 1953 Harold R. Griffith

1951 1954 William Hill Somers

Began 1952

1952 1955 Joan R. Hale

1952 1955 John R. Olson

1952 1955 Clarence McIntire

1952 1955 J. Stewart Whitmore

Began 1953

1953 1956 Paul C. Harding

1953 1956 Howard C. Neucks

1953 1956 Deward D. Peterson

1953 1954 Glenn E. Ross

1953 1956 David E. Wheeler

Began 1954

1954 1957 John W. Courtney

1954 1957 George P. Backer

1954 1959 Charles H. Helmen

1954 1957 W. Donald Janney

1954 1955 Alice McCrea

Began 1955

1955 1958 Joseph S. Bean

1955 1958 Frank L. Lesko

1955 1957 Barbara Walters Thompson

1955 1958 Eldon D. VanSandt

1955 1958 George Werner

Began 1956

1956 1959 Earl R. Brown
1956 1959 John L. Gwinn
1956 1958 H. Robert Hittner
1956 1958 George Howe
1956 1959 Thomas R. Marshall

Began 1957

1957 1960 George E. Coade
1957 1960 Richard E. Ginter
1957 1960 Paul Martyn Inlow
1957 1960 Robert J. Yingling

Began 1958

1958 1961 Richard L. Jontz
1958 1961 Edwin F. Koch
1958 1961 Gerald Jay Kurlander
1958 1960 Rodney R. Million
1958 1961 Leman Ray Stewart

Began 1959

1959 1962 Richard F. Fox
1959 1962 Richard John Noveroske
1959 1962 Phillip B. Sisk
1959 1962 Paul L. Webster
1959 1962 Ralph Lynn Turner

Began 1960

1960 1963 Delano Zeus Arvin
1960 1963 William Henderson Baker
1960 1963 Michael Andrew Kyle
1960 1963 Gerald M. Wohlfeld

Began 1961

1961 1964 H. Joseph Cronin
1961 1964 John R. Dehner
1961 1963 Andre A. Galiber
1961 1964 James V. Grief
1961 1964 Harry R. Hittner
1961 1964 William J. Miller
1961 1962 John P. Tampas

Began 1962

1962 1965 Lawrence U. Cookson
1962 1965 Jay W. Hammer, Jr.
1962 1965 Ned B. Hornback
1962 1965 Richard W. Van Buskirk

Began 1963

1963 1966 A. Raymond Brooker, Jr.
1963 1966 Sam W. Campbell
1963 1966 Fredrick Seymore Mishkin
1963 1966 Jon D. Shoop
1963 1966 Donald Eugene Widman

Began 1964

1964 1965 Robert Eugene Brubeck
1964 1967 Edward Meeks Cockerill
1964 1967 Edmund Anthony Franken
1964 1969 Donald Charles Moore
1964 1967 Evrett Emerson Smith
1964 1965 John Alvin Stryker

Began 1965

1965 1968 Alan D. Belcher
1965 1968 John Alton Knot
1965 1968 Melvyn Bernard Lieberman
1965 1966 David Myren Rankin
1965 1968 Gary M. Tolley
1965 1968 John H. Truksa
1965 1970 Robert Hudson Winter

Began 1966

1966 1969 Richard Lee Bauman
1966 1969 Gonzalo Tan Chua
1966 1969 Mary Ann Cortese
1966 1969 Victor Joseph DiOrio, Jr.
1966 1969 James E. Huddleston
1966 1967 Joseph David McPike
1966 1969 Theodore L. Megremis
1966 1969 Burton Garwood Must
1966 1969 James T. Telle

Began 1967

1967 1972 Donald R. Hawes
1967 1968 John Edward Jenkins
1967 1969 Sung Uk Kim
1967 1970 William Squire Merrell
1967 1968 Nancy L. Oehler
1967 1970 Frank M. Weinhold, III

Began 1968

1968 1971 Merle H. Barth
1968 1971 Robert D. Dormire
1968 1971 Raymond W. Gize
1968 1971 Phillip D. Godsey
1968 1969 Herbert D. Helbig
1968 1970 William A. Lynch
1968 1971 Jerald Burton Maltzman
1968 1971 Donald R. Sugarman
1968 1971 Donald Traicoff
1968 1971 Klaus Wolfgang Weber

Began 1969

1969 1972 Richard G. Bilodeau
1969 1974 Wolfgang R. Bley
1969 1972 Frederick Bennett Giles
1969 1972 Reuben Jackson Jones
1969 1972 Seymour Howard Mirkes
1969 1970 John Robert Olson, Jr.
1969 1969 Nooredin Raufi

Began 1970

1970 1971 Ivan R. Barrett
1970 1972 *Thomas David Breitweiser*
1970 1973 Gerald Keith Claycomb
1970 1973 *Allen Dale Dvorak*
1970 1972 John J. Fitzpatrick
1970 1973 Hugh Fred Gardiner
1970 1973 Robert Jay Gubler
1970 1973 Thomas J. Hicks
1970 1974 John Louis Horvath, Jr.
1970 1970 Barbara Jo Krueger
1970 1973 William A. Kyle
1970 1973 James Joseph Linville
1970 1971 Mark C. Nardone
1970 1971 Ted Rogers Nicholas
1970 1973 Arnold Vinstein

Began 1971

1971 1975 Homer F. Beltz
1971 1974 Barry Alan Blum
1971 1974 Lynn R. Dale
1971 1974 *Bruno De Palma*
1971 1974 Charles G. Diamond
1971 1974 Edward P. Feutz
1971 1972 Frank D. Pairitz
1971 1974 Donald Charles Parker
1971 1974 Dennis J. Trzpuć
1971 1974 Yee-Tun Wu

Began 1972

1972 1973 Everett G. Davis
1972 1972 Michael T. Dunfee
1972 1975 William J. Elliott
1972 1973 Carl George Hoffman, Jr.
1972 1976 Benny Siu-Ping Ko
1972 1975 Victor J. Louisin
1972 1976 Gordon C. McLaughlin, III
1972 1975 *James Michael Phelps, Jr.*
1972 1975 Ramachandra Reddy
1972 1976 Peter L. Scott

Began 1973

1973 1977 John Carpenter Barnes
1973 1976 William Cooper
1973 1977 Randall W. Fields
1973 1976 A. Patricia Harper (Romilly)
1973 1976 Felipe N. Lim
1973 1975 John Novak Pasalich
1973 1976 Jonathon Tryesdake Stafford
1973 1974 Michael A. Sucher
1973 1976 Jeffrey Alan Weiss
1973 1976 *Robert A. Woolfitt*



Arouj Hashmi, M.D.,
and Barbaros Cil, M.D.
in the reading room.

Began 1974

1974 1977 Evangeline Archer
1974 1978 *Bryan Thomas Burney*
1974 1977 Timothy Gilbert Cloonan
1974 1976 Richard Martin Dichter
1974 1977 Allen E. Forry
1974 1977 Richard L. Gilmor
1974 1977 James Alexander Guest
1974 1977 Gerald F. Hulvat
1974 1977 Yoon Seong Kim
1974 1978 John Lambertus, Jr.

Began 1975

1975 1975 Gustavo Elias
1975 1979 Jeremy Scott Lomax
1975 1979 Margaret Milos-Nye
1975 1975 Richard J.L. Phillips
1975 1978 Stephen J. Regan
1975 1979 *Bruce D. Richmond*
1975 1978 Robert W. Stigall
1975 1978 Thomas T. Tucker
1975 1978 Sara E. Zieverink
1975 1978 John P. Wuertz

Began 1976

1976 1979 Donald J. Bruns
1976 1980 Joseph J. Chan
1976 1980 *Mark H. Fox*
1976 1980 Donald L. Kreipke
1976 1980 John C. Lappas
1976 1979 SuYong Pak
1976 1980 Franklin W. Sequeira
1976 1980 William D. Shidal, Jr.
1976 1980 Cameron Lee Stokka
1976 1980 Joseph H. Tashjian
1976 1980 Jose E. Trujillo

Began 1977

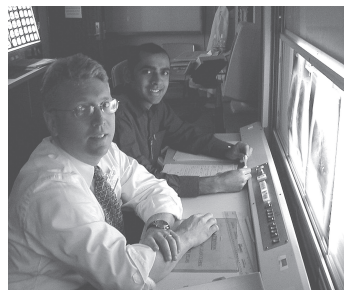
1977 1981 Peter Arfken
1977 1981 Martin K. Baker
1977 1980 Edward R. Bartley, III
1977 1982 Gary R. Conrad
1977 1978 James Steven Fenoglio
1977 1981 Tobin J. Mathews
1977 1981 Michael S. McCrea
1977 1981 Donald S. Schauwecker
1977 1981 *Robert Dean Slabaugh*
1977 1979 Edward H. Snyder
1977 1981 Daniel W. Whitehead

Began 1978

1978 1981 Gary J. Becker
1978 1982 James H. Ellis
1978 1981 *James Franco*
1978 1982 Gordon Frederick Greenman
1978 1982 Valerie P Jackson
1978 1982 Victor F. Jones, II
1978 1982 John A. Morton
1978 1981 Frank E. Rabe
1978 1982 Jeffrey I. Reider
1978 1982 Edgar C. Stambuk

Began 1979

1979 1982 David M. Barnes
1979 1983 Richard T. Beeler
1979 1983 John R. Bies
1979 1983 Robert E. Gunderman
1979 1982 *John M. Harper*
1979 1983 Owen Lee
1979 1983 Nancy L. MacDonald
1979 1983 Eldon W. Olson
1979 1983 Robert J. Rust
1979 1983 Bobbie Gwen Uri



Cris Meyer, M.D., and Samir Patel, M.D., in the chest reading room in 2001.

Began 1980

1980 1984 Barbara Ellen Carr
1980 1983 Dewey J. Conces, Jr.
1980 1984 Kenyon K. Kopecky
1980 1984 *Phyllis Martin-Simmerman*
1980 1983 Jack J. Moss
1980 1984 F. Michael Mullinix
1980 1984 Margaret A. Olson
1980 1984 John A. Scott
1980 1984 Steven A. Strickler
1980 1983 Robert D. Tarver

Began 1981

1981 1984 Richard T. Buck
1981 1985 David A Cory
1981 1985 *Joe M. Eskridge*
1981 1985 Douglas S. Kuehn
1981 1982 Ann Marie T H LeVan
1981 1985 Richard E. Lowe
1981 1985 John T. Mail
1981 1985 Russell E. Reichter
1981 1985 Richard L. Scales

Began 1982

1982 1986 Gary T. Augustyn
1982 1986 Robert B. Davis
1982 1986 Philip R. Doering
1982 1986 Rene P. du Cret
1982 1986 William J. Lavin
1982 1986 Chet R. Rees
1982 1986 Peter A. Rothschild
1982 1986 *David M. Rowe*
1982 1986 Linda McKinney Scott
1982 1986 James Wehrenberg
1982 1986 Josef C. Wenker

Began 1983

1983 1987 Thomas G. Belt
1983 1987 Orest B. Boyko
1983 1987 Janette Denham Durham
1983 1987 W. Cory Gray
1983 1987 Marshall Edward Hicks
1983 1987 *Bernard F. King*
1983 1987 Theodore A. Lee, III
1983 1987 Gregory A. Merchun

1983 1987 Lesley A. Petrich
1983 1987 John J. Warner

Began 1984

1984 1988 *James F. Benenati*
1984 1988 Michael Bogan
1984 1988 Peter G. D'Amour
1984 1988 Steven A. Fritsch
1984 1988 Kevin R. Gillespie
1984 1988 Kevin J. Koch
1984 1988 LienChing Lin
1984 1988 Elizabeth A. Pearcy
1984 1988 David J. Rippe
1984 1988 Clifton M. Tatum, Jr.

Began 1985

1985 1989 James R. Bognanno
1985 1986 Duncan C. Brindley
1985 1989 Karen O. Ehrman
1985 1989 William K. Ingham
1985 1989 J. Frederick Klink
1985 1989 Michael A. Kuharik
1985 1989 Daniel E. Lucas
1985 1989 *Charles Mulry*
1985 1989 Jerome F. Schrodt
1985 1989 Douglas I. Silver

Began 1986

1986 1990 Steven Don
1986 1990 David M. Garagiola
1986 1990 Jon T. Harman
1986 1990 Connie D. Harrill
1986 1990 Todd M. Harris
1986 1990 Veronica J. Harris
1986 1990 Jean L. Kraft
1986 1990 *Vincent P. Mathews*
1986 1990 Joseph Micho
1986 1990 John Shannon Swan
1986 1990 Harold A. White

Began 1987

1987 1991 Mark C. Arvin
 1987 1991 Dale R. Broome
 1987 1991 **Kevin Burton**
 1987 1991 Kelly J. Cassedy
 1987 1991 Ryo Eun Choi Benson
 1987 1991 Joseph R. DeCamp
 1987 1991 Frank Lee
 1987 1991 James S. Littman
 1987 1991 James D. Lutz
 1987 1991 Handel E. Reynolds

Began 1988

1988 1992 Mary Patricia Braeuning
 1988 1992 Karen S. Caldemeyer
 1988 1992 John Robert Howard
 1988 1992 *Henry Jones*
 1988 1992 Edwin HyunJi Kim
 1988 1992 Jane S. Mitchell
 1988 1992 Catherine C Moran
 1988 1992 Paul Sheets
 1988 1992 Eric M. Walser
 1988 1992 Lori J. Wells

Began 1989

1989 1993 Koreen Ballhagen
 1989 1993 Mary E. Below
 1989 1993 *Michael Brendle* (Sr Yr)
 1989 1993 Eric D. Elliott
 1989 1993 David Janizek
 1989 1993 Thomas Murphy
 1989 1993 Orrin Perkins
 1989 1993 Stephan Stockberger
 1989 1993 *Frederick Vanbastelaer* (Jr Yr)
 1989 1993 Perry E. Wethington

Began 1990

1990 1994 Stanley G. Alexander
 1990 1994 Sheri W Armstrong
 1990 1994 Margaret A Brengle
 1990 1994 *Eric M Bugaieski*
 1990 1994 Mark R DeGalan
 1990 1994 Beth E. Ingram
 1990 1994 Colleen M Madden
 1990 1994 Jerome P. Quets
 1990 1991 Steven Smith
 1990 1994 Mubin I Syed

Began 1991

1991 1995 *Jeffrey M. Barkmeier*
 1991 1995 Carla J. Brumbaugh
 1991 1995 James B. Carrico
 1991 1995 John Daniel Engelken
 1992 1995 Joseph C. George
 1991 1995 Hemalatha S. Gokhale
 1991 1995 Susan M. Ivancevich
 1991 1992 Guy Kaissar
 1991 1995 Michael G. Khamis
 1991 1995 Himanshu Shah
 1991 1995 Kevin A. Short

Began 1992

1992 1996 Benjamin R. Bamford
 1992 1996 Caroline T. Carrico
 1992 1996 Georgia K. Dorulla
 1992 1996 *Alan B. Engel*
 1992 1996 Michael D. Fisher
 1992 1996 Michael K. Kramer
 1992 1996 James P.K. Pak
 1992 1996 Ryan V. Piper
 1992 1996 Jennifer E. Tribble
 1992 1996 MaryLynn Wolfe



Mark Estrada, M.D.

Appendices: Residents Through the Years

Began 1993

1993 1997 Caryn Cockerill Anderson
1993 1997 Steven C. Basinski
1993 1997 Mark D. Estrada
1993 1997 Jeanette Fulton
1993 1997 *Jeffrey Allen Hicklin*
1993 1994 John Jackson Linnett
1993 1997 Christopher Scott Peeters
1993 1996 Steven J. Saulsbury
1993 1997 Kevin M. Small
1993 1997 Stephen B. Stine
1993 1997 Matthew L. White

Began 1994

1994 1998 Neal David Abdullah
1994 1998 Christoph Alexander Bergmann
1994 1998 Timothy Andrew Bernauer
1994 1998 Sam S. Chee
1994 1998 Scott A Childress
1994 1998 Darren Madison Davenport
1995 1998 Melissa Grace Glantz
1994 1998 Tse-Chung Hsu
1994 1995 W. Anthony Kendall
1994 1998 Clarence R. Reilly
1994 1998 *Michael M. Wheeler*

Began 1995

1995 1999 L. Chris Bachman
1995 1999 *Douglas R. Baker*
1995 1999 Jayesh Kumar Hari
1995 1999 Daniel J. Krejchi
1995 1999 Terry S. Lee
1997 1999 Cheryce M. Poon
1995 1999 Kenneth A. Spero
1995 1996 Sendhil K. Subramanian
1995 1999 Linda L. Tuthill
1995 1999 Todd A. Winkler

Began 1996

1996 2000 James Joseph Blahunka
1996 1900 David Martin Cameron
1996 2000 *Timothy Gilbert Cloonan*
1996 2000 Keith Alan Crow
1996 2000 Paul Mark Loeffler
1996 2000 Samir Bipin Patel
1996 2000 Zeeshan A. Shah
1996 2000 William Wayne Skiles
1996 1900 Erwin Thimm
1996 2000 James Gerard Waldschmidt

Began 1997

1997 2001 Thomas Francis Hagman
1997 1901 *David Hahn*
1997 2001 Peter McGraw
1997 2001 Kevin J. Sasadeusz
1997 2001 Gregory Blake Smith
1997 2001 Michael Lawrence Swack

Began 1998

1998 2003 James Michael Anderson
1998 2002 Rajesh Dhamecha
1998 2002 Victoria Edmond
1998 2003 Michael Fuchs
1998 2003 Sheryl Hancock
1998 2002 Son Nguyen
1998 2002 Alan Reeves
1998 2002 Shane Rose
1998 1998 Kimberly A. Stigler
1998 2003 Kenneth Ray Stookey
1998 2002 Ester van der Wal
1998 2002 *Terrence Wilkin*

Sheryl Hancock, M.D.,
studies in the nuclear
medicine reading room.



Began 1999

1999 2003 Guillermo Andres Arbona
 1999 2003 Shane Arthur Baker
 1999 2000 Danielle Bentz Bechert
 1999 2003 Mark Hammond Coe
 1999 2000 Anne Niemiro Crowley
 1999 2003 Winston Brooks Davis
 1999 2003 Rajat Gupta
 1999 2003 Arouj A. Hashmi
 1999 2003 Kayiguvwe O. Kragha
 1999 2003 *Chad Gregory Kuhlman*
 1999 2003 Hsingyee Emily Lee
 1999 2003 Tracy Ann Martin
 1999 2003 Andrew Jason Mullinix
 1999 2003 Frederick Florentino Origenes
 2002 2003 Babak Rejaie
 1999 2003 Shawn DeWayne Teague

Began 2000

2000 2004 John Francis Alexander
 2000 2004 William Bernard Betz
 2000 2004 Erik Norman Kraske Cressman
 2000 2004 George Barber Dunn
 2000 2004 Scott Christian Gaerte
 2000 2004 Bryan Christopher Hankins
 2000 2004 Darel Edward Heitkamp
 2000 2004 Christine Elizabeth Huxol
 2000 2004 Brad Michael Johnston
 2000 2004 Jay Todd Jones
 2000 2004 Fatima Kazem
 2000 2004 *Matthew Austin Lowery*
 2000 2004 Michael Luther Lutz
 2000 2004 Michael J. Malis
 2000 2004 Parvez Masood
 2000 2004 Michael Zachary Stein
 2000 2004 Kari Wells Helms

Began 2001

2001 2005 Jody M. Barber
 2001 2005 Kenneth Duane Bowman
 2001 2005 *Daniel Wayne Bozarth*
 2001 2005 Michael Shawn Conley
 2001 2005 Lisa Roberta Delaney
 2001 2005 Chang Yueh Ho
 2001 2005 Hal Douglas Kipfer
 2001 2005 Matthew Gregory Niemi
 2001 2005 Aashish Ashwin Patel
 2001 2005 Nakiisa Monique Rogers
 2001 2005 Avanee Arun Shah
 2001 2005 Noaman Wajid Siddiqi
 2001 2005 Katherine Huffman Walker
 2001 2005 Brian Wallace
 2001 2005 Matthew Ryan Wanner
 2001 2005 Michael Edward Welling

Began 2002

2002 2006 Robert Stanley Andrews
 2002 2006 Stephen Albert Burky
 2002 2006 Jeffrey William Dunkle
 2002 2006 Karl Christopher Fahrback
 2002 2006 Warren Kent Hansen
 2002 2006 Danny Lynn Leatherwood
 2002 2006 Shadie Sarah Majidi
 2002 2006 Kellie Leigh McDonald
 2002 2006 Darren Paul O'Neill
 2002 2006 Abdul Rahman Quadeer
 2002 2006 Maryam Rezvani
 2002 2006 Terri Tameka Samuel
 2002 2006 Matthew Gregory Shutske
 2002 2006 John Matt Sturgeon
 2002 2006 Andrea Marie Tompkins
 2002 2006 Samuel Donglon Yu



Eugene Klatte, M.D. works with a resident in the Riley reading room.

Appendices: Residents Through the Years

Began 2003

2003 2007 Sandeep Singh Ahluwalia
2003 2007 Grant Scott Berges
2003 2007 Jennifer Anne Connolly
2003 2007 Susan Marguerite Crook
2003 2007 John Patrick Dohrman
2003 2007 Eric Matthew Edds
2003 2007 Joshua Wesley Garrett
2003 2007 Adam Michael Gregory
2003 2007 Tamarya Lea Hoyt
2003 2007 Patrick Thomas Hurley
2003 2007 Catherine Ann Kurowski
2003 2007 Jonathan Andrew Staser
2003 2007 Jeffrey Randolph Wichman
2003 2007 Eric Y Yeh
2003 2007 Van An Young

Began 2004

2004 2008 Daniel Branam
2004 2008 Mark Ferrara
2004 2008 Christopher Fischer
2004 2008 Jason Ford
2004 2008 Aaron Hattaway
2004 2008 Marc Kohli
2004 2008 Shannon Kauffman
2004 2008 Omar Mahmood
2004 2008 Alan Northington
2004 2008 Shannon Powell
2004 2008 Ryan Steinbaker
2004 2008 Bilal Tahir
2004 2008 Stephen Wei
2004 2008 Amy Wisnewski
2004 2008 Eric Weston

Unknown dates

Edwin N. Barnum
Richard M. Colbert



Stump the Experts!

On January 14, 2004 the Department of Radiology's residents and staff participated in a special Noon Conference where the residents were able to present test cases to the staff. The staff were required to answer orally on cases that were not necessarily in their specialty. This year a panel of 4th year residents scored the faculty member's response, based on the same scoring as used by the American Board of Radiology on the Oral Boards exam.

Fellows / Junior Staff Through the Years

1972

Name	Subspecialty
Jovitas Skucas	GI

1973

Name	Subspecialty
Robert Jay Gubler	
James C. Camarata	GI

1974

Name	Subspecialty
Barry Blum	

1975

Name	Subspecialty
Homer F. Beltz	
Gordon C. McLaughlin, III	GI
Bijan Keramati	

1976

Name	Subspecialty
John Barnes	Pediatrics
Timothy G. Cloonan	Interventional
Randall W. Fields	
Gary H. Peterson, Jr.	
Robert A. Woolfitt	

1977

Name	Subspecialty
Yoon Seong Kim	
John Lambertus, Jr.	

1978

Name	Subspecialty
Gerald F. Hulvat	
Jeremy (Scott) Lomax	
Margaret Milos-Nye	
Sara E. Zieverink	
Michael J. Besozzi	

1979

Name	Subspecialty
Mark H. Fox	Body Imaging
Franklin W. Sequeira	Interventional
Joseph J. Chan	
William D. Shidal, Jr.	
Cameron Lee Stokka	
Joseph H. Tashjian	Chest
Jose E. Trujillo	

1980

Name	Subspecialty
Peter Arfken	
Gary R. Conrad	Nuclear Medicine
Donald L. Kreipke	
John C. Lappas	Abdominal
Tobin J. Mathews	
Michael S. McCrea	
Robert Dean Slabaugh	

1981

Name	Subspecialty
Martin K. Baker	Abdominal
Gary J. Becker	Interventional
James Franco	Neuroradiology
Gordon F. Greenman	
Victor F. Jones, II	
John A. Morton	
Jeffrey I. Reider	
Donald S. Schauwecker	Nuclear Medicine
Edgar C. Stambuk	

1982

Name	Subspecialty
Richard T. Beeler	
John R. Bies	
James H. Ellis	Body Imaging
Robert E. Gunderman	
Owen Lee	
Nancy L. MacDonald	
Robert J. Rust	
Bobbie Gwen Uri	

Appendices: Fellows / Junior Staff Through the Years

1983

Name	Subspecialty
Steven A. Strickler	
Barbara Ellen Carr	Pediatrics
Dewey J. Conces, Jr.	Chest
F. Michael Mullinix	Nuclear Medicine
Eldon W. Olson	

1984

Name	Subspecialty
Joe M. Eskridge	
Douglas S. Kuehn	
Richard E. Lowe	
Margaret A. Olson	
Russell E. Reichter	

1985

Name	Subspecialty
Peter A. Rothschild	Mammography
David M. Rowe	
Linda McKinney Scott	
Gary T. Augustyn	Neuroradiology
David A Cory	Pediatrics
Robert B. Davis	
Philip R. Doering	
Rene P. du Cret	Nuclear Medicine
Kenyon K. Kopecky	Abdominal
William J. Lavin	
John T. Mail	
Chet R. Rees	Interventional
Richard L. Scales	
John A. Scott	Neuroradiology
James Wehrenberg	
Josef C. Wenker	

1986

Name	Subspecialty
W. Cory Gray	
Thomas G. Belt	
Orest B. Boyko	Nuclear Medicine
Janette Denham Durham	Interventional
Marshall E. Hicks	Interventional
Bernard F. King	Abdominal
Theodore A. Lee, III	
Gregory A. Merchun	
Lesley A. Petrich	
John J. Warner	Neuroradiology

1987

Name	Subspecialty
Mahmoud M. Tuli	Nuclear Medicine
James F. Benenati	Interventional
Peter G. D'Amour	
Steven A. Fritsch	
Kevin R. Gillespie	
Kevin J. Koch	Neuroradiology
LienChing Lin	Nuclear Medicine
Elizabeth A. Percy	
David J. Rippe	
Clifton M. Tatum, Jr.	

1988

Name	Subspecialty
Michael Bogan	Abdominal
James R. Bognanno	Neuroradiology
William K. Ingham	
J. Frederick Klink	
Kevin J. Koch	Neuroradiology
Michael A. Kuharik	Neuroradiology
Daniel E. Lucas	
Charles Mulry	
Jerome F. Schrodt	

1989

Name	Subspecialty
Karen O. Ehrman	Interventional
David M. Garagiola	Abdominal
Connie D. Harrill	Mammo/Ultrasound
Jean L. Kraft	Mammography
Joseph Micho	Interventional
Harold A. White	Interventional / CT

1990

Name	Subspecialty
Dale R. Broome	Abdominal
Ryo Eun Choi Benson	Neuroradiology
Joseph R. DeCamp	General Radiology
Steven Don	Pediatric Radiology
Jon T. Harman	Interventional
Todd M. Harris	Neuroradiology
Veronica J. Harris	Interventional
Mahmoud Hindi	Nuclear Medicine
Frank Lee	General Radiology
James S. Littman	General Radiology
James D. Lutz	General Radiology

1991

Name	Subspecialty
Mark C. Arvin	Neuroradiology
M. Patricia Braeuning	Mammography
Nigel Broderick	Pediatric Radiology
Kelly J. Cassedy	Neuroradiology
Michael Haggerty	Interventional
Mahmoud Hindi	Nuclear Medicine
John R. Howard	General Radiology
Henry Jones	Abdominal
Edwin HyunJi Kim	Interventional
David M. Kushner	Musculoskeletal
Jane S. Mitchell	General Radiology
John D. Reed, Jr.	Interventional
Handel E. Reynolds	Mammography
Andre Strzembosz	Interventional
Eric M. Walser	Interventional
Lori J. Wells	General Radiology

1992

Name	Subspecialty
Kevin Burton	Interventional
Karen S. Caldemeyer	Neuroradiology
Etienne Cardinal	Musculoskeletal
Martijn Grieten	Musculoskeletal
Henry Jones	Abdominal
Nuala Kennan	Pediatric Radiology
Moira McCarty	Pediatric Radiology
Catherine C Moran	Neuroradiology
Paul Sheets	Interventional
Frederick Vanbastelaer	General Radiology

1993

Name	Subspecialty
Mary E. Below	Neuroradiology
Sushama Bhargava	Nuclear Medicine
Eric D. Elliott	Musculoskeletal
Mithat Haliloglu	Pediatric Radiology
Paul Hargan	Interventional
Geraldine Mogavero Newmark	Abdominal
Thomas Murphy	General Radiology
Orrin Perkins	Nuclear Medicine
Stephan Stockberger	Abdominal
Perry E. Wethington	Neuroradiology
Mark Vaccaro	Abdominal

1994

Name	Subspecialty
Sheri W Armstrong	Neuroradiology
Sushama Bhargava	Nuclear Medicine
Margaret A Brengle	Interventional
Eric M Bugaieski	Pediatric Radiology
Laurian Mark Dean	Interventional
Mark R DeGalan	Nuclear medicine
P Kevin Froberg	Musculoskeletal
Robert L. Heyd	Abdominal
Beth E. Ingram	Interventional
Colleen M Madden	Mammo /
Musculoskeletal	
Jerome P. Quets	Neuroradiology
Mubin I Syed	Neuroradiology

1995

Name	Subspecialty
Mark A. Bisesi	Chest
Carla J. Brumbaugh	Neuroradiology
James B. Carrico	Neuroradiology
Mary S Davey	Pediatric Radiology
Florence M Gin	Mammography
Hemalatha S. Gokhale	Abdominal
Susan M. Ivancevich	Musculoskeletal
Boaz Karmazyn	Pediatric Radiology
Michael G. Khamis	Abdominal
Young Ha Park	Nuclear Medicine
Himanshu Shah	Interventional
Kevin A. Short	Interventional
Mubin I Syed	Interventional

1996

Name	Subspecialty
Timothy Joseph Carmody	Interventional
Soumendu Das	PET
Diane M. DiGirolamo	Abdominal
Georgia K. Dorulla	Musculoskeletal
Michael D. Fisher	Breast
Stacy L. Greenspan	Neuroradiology
Emily D. Kucera	Pediatrics
Ryan V. Piper	Interventional
Mark L. Redick	Breast
Kumaresan Sandrasegaran	Abdominal
Christina N. Shinaver	Neuroradiology
David J. Smith	Interventional
Rhonda Counselman Smith	Chest
MaryLynn Wolfe	Neuroradiology

Appendices: Fellows / Junior Staff Through the Years

1997

Name	Subspecialty
Caryn Anderson	Abdominal
Jean-Martin Baillargeon	Pediatric Radiology
Steven Basinski	Musculoskeletal
Craig Bruner	Neuroradiology
Kevin Edelman	Abdominal
Mark Estrada	Nuclear Medicine/PET
Jeanette Fulton	Interventional
Stacy Greenspan	Neuroradiology
Richard Gunderman	Pediatric Radiology
John Hildebrandt	Chest
Christopher Peeters	Interventional
Kevin Small	Interventional
Stephen Stine	Interventional
Matthew White	Neuroradiology
Bokran Won	Mammography

1998

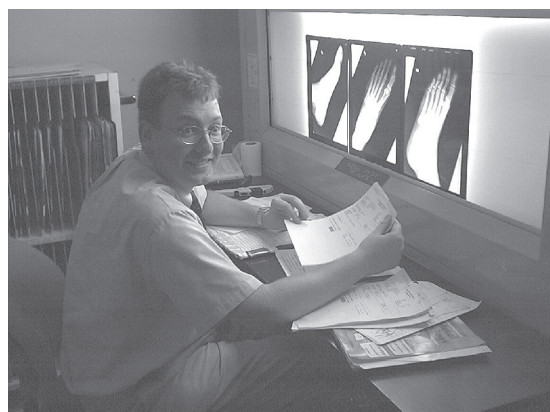
Name	Subspecialty
Neal Abdullah	Neuroradiology
Timothy Bernauer	Neuroradiology
William Berry	Abdominal
Sam Chee	Interventional
Scott Childress	Musculoskeletal
Robert M. Cook	Nuclear Medicine
Andrew Cox	Interventional
Shamim Dada	Abdominal
Darren Davenport	Musculoskeletal
Benjamin Krumstok	Abdominal
Natalie Ku	Interventional
Mary Lesnefsky (Nicholson)	Mammography
Parvez Masood	Neuroradiology
Gordan McLennan	Interventional
Clarence Reilly	Interventional
Michael Willson	Neuroradiology

1999

Name	Subspecialty
L. Chris Bachman	Abdominal
Douglas Baker	Mammography
Anthony Eclavea	Interventional
Jayesh Kumar Hari	Interventional
Jeffrey Hemmerlein	Neuroradiology
Terry Lee	Interventional
Gordon McLennan	Interventional
Cheryce Poon	Nuclear Medicine
Ari I. Salis	Interventional
Linda Tuthill	Mammography
Alka Wells	Abdominal
Michael Willson	Neuroradiology
Todd Winkler	Neuroradiology
Edward L. Yang	Musculoskeletal
Ravi Yarlagadda	Neuroradiology

2000

Name	Subspecialty
David Agarwal	Interventional
James Blahunka	Nuclear Medicine
Konstantin Chernukha	Neuroradiology
Timothy Cloonan	Interventional
Keith Crow	Musculoskeletal
Anthony Eclavea	Interventional
Jeffrey Hemmerlein	Neuroradiology
Elizabeth McGraw	Pediatrics
Hitesh Movalia	Interventional
Samir Patel	Mammo
Ari Salis	Interventional
Zeeshan Shah	Mammo
Peter Stangas	Neuroradiology
Mark Tann	CT & NM
Aparna Velnati	Abdominal
Todd Winkler	Neuroradiology



Brad Johnston, M.D.

2001

Name	Subspecialty
Sayed Ali	General Radiology
Ricardo Bracer	Interventional
Robert Bretz	Chest/Mammo
David Brummett	Neuroradiology
Shi-Yu Chen	Neuroradiology
Konstantin Chernukha	Neuroradiology
Kok Chong	Interventional
Robert Choplin	Musculoskeletal
Barbaros Cil	Interventional
Shamim Dada	Neuroradiology
Venkataramu Krishnamurthy	Interventional
Raymonda Stevens	Mammo
Michael Sze	Musculoskeletal
Mark Tann	CT & NM

2002

Name	Subspecialty
Rajeev Anugu	Neuroradiology
Rupal Bandi	Interventional
Rajesh Dhamecha	Breast
Maria Dolar	Pediatric
Victoria Edmond	Breast
Connie Gapinski	Neuroradiology
Grace Guo	Pediatric Radiology
Geoffrey Jones	Interventional
Richard Kijowski	Musculoskeletal
Francis Marshalleck	Interventional
Jorge Medina	Musculoskeletal
Sanjay Pathak	Interventional
Ewa Plagman	General
Shane Rose	Neuroradiology
Kumar Sandrasegaran	Abdominal
Aninchana Sangkharat	Nuclear Medicine
Juan Tejada	Neuroradiology

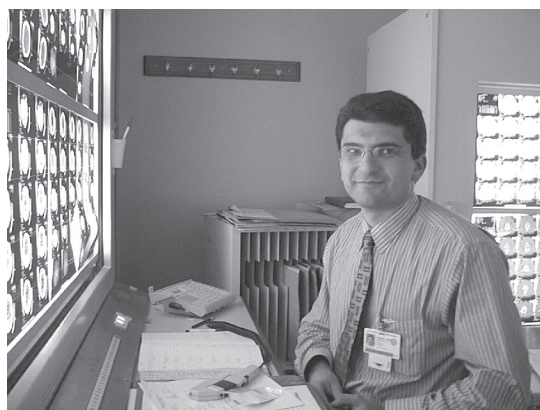
2003

Name	Subspecialty
Abdelrahman M. Abdalla	Neuroradiology
James M. Anderson	Pediatric
Guillermo A. Arbona	General Radiology
Mark H. Coe	Interventional
Winston Brooks Davis	Interventional
Michael Fuchs	Musculoskeletal
Rajat Gupta	Interventional
Tracy A. Martin	Musculoskeletal
Frederick F. Origenes	Breast
Arumugam Rajesh	Abdominal
Babak Rejaie	Pediatric
Kumar E. Sandrasegaran	Abdominal
Aninchana Sangkharat	Nuclear Medicine
Kenneth Stookey	General Radiology
Chewarat Wirojtananugoon	Neuroradiology

2004

Name	Subspecialty
Wessam Bou-Assaly	Neuroradiology
Mark Coe	Neuroradiology
Erik Cressman	Interventional
Chunli Deng	Neuroradiology
George Dunn	Musculoskeletal
Bryan Hankins	Interventional
Brad Johnston	Musculoskeletal
Harpreet Judge	Abdominal
Matthew Lowery	Musculoskeletal
Amr Mourad	Neuroradiology
Guruprasad Srinath	Pediatrics
Michael Stein	Breast
Stephen Westphal	Nuclear Medicine
Chewarat Wirojtananugoon	Neuroradiology

Michael Stein, M.D. as a resident in the Wishard neuroradiology reading room.



Acknowledgements of Sources

Taped interviews with

Buckwalter, Dr. Kenneth	Burt, Dr. Robert
Brown, Dr. Earl	Campbell, Dr. John A
Campbell, Mary Ann	Chua, Dr. Gonzolo
Cockerill, Dr. Edward	Cohen, Dr. Mervyn
Conces, Dr. Dewey	Datzman, Dr. Richard C.
Dolan, Dr. Patrick	Edwards-Brown, Dr. Mary
Fitzpatrick, Dr. John	Gunderman, Dr. Richard
Hawes, Dr. Donald	Helman, Dr. Charles
Holden, Dr. Robert	Hutchins, Dr. Gary
Jackson, Dr. Valerie	Johnson, Dr. Matthew
Kehrein, Suetta	Klatte, Dr. Eugene
Kreipke, Dr. Donald	Kurlander, Dr. Gerald
LaMasters, Michael	Lappas, Dr. John
Lurito, Dr. Joseph	Maglinte, Dr. Dean
Mathews, Dr. Vincent	Moak, Dr. Glenn
Mock, Dr. Bruce	Park, Dr. Hee Myung
Robb, Marie (Mrs. John)	Schauwecker, Dr. Donald
Shah, Dr. Hirmanshu	Shuman, Lois
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Wass, Dr. Justin	Wellman, Dr. Henry
Wyant, Fred	Yune, Dr. Heun Yung

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Indiana Medicine
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Indiana University Register/Announcements
Focus on the Future
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Images Department of Radiology Newsletters
Office of Faculty Record, Indiana School of Medicine
IUPUI Medical Center News Bureau releases
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Indianapolis city directories

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John A. Campbell, M.D.

Owen Lee, M.D.

Carlotta Griner

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Mrs. André Galiber

Frederick Mishkin, M.D.

Heun Yune, M.D.

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Kevin Perry, R.T.

Liang-Che Tao, M.D.

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