

Are your MRI contrast agents cost-effective?
Learn more about generic Gadolinium-Based Contrast Agents.



AJNR

Harold O. Peterson, MD: a life in neuroradiology.

S A Kieffer

AJNR Am J Neuroradiol 1993, 14 (6) 1427-1435
<http://www.ajnr.org/content/14/6/1427.citation>

This information is current as
of April 19, 2024.

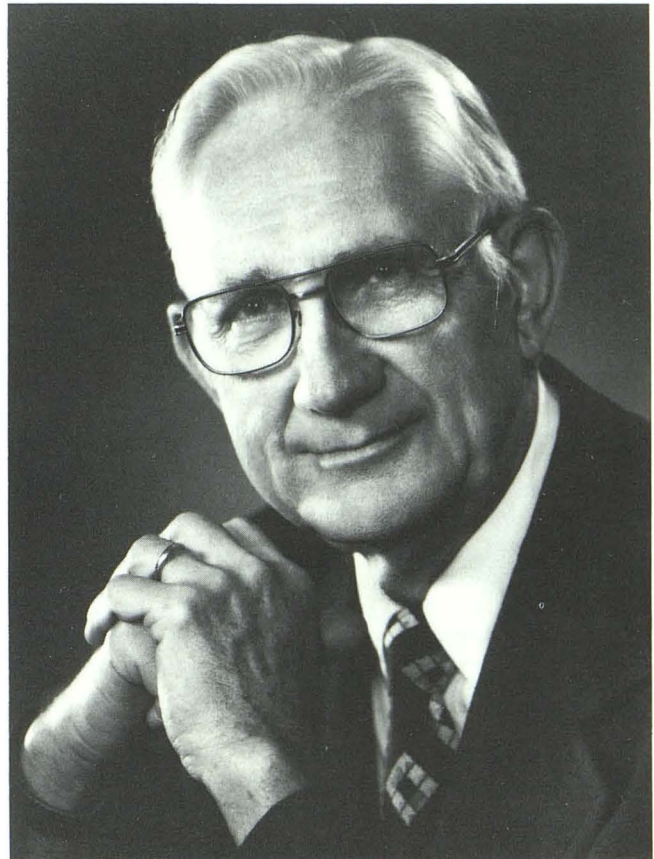
Harold O. Peterson, MD: A Life in Neuroradiology

Stephen A. Kieffer¹

Harold O. Peterson, pioneer neuroradiologist, "masterful myelographer," chairman of the Department of Radiology at the University of Minnesota, and one of the 14 founding members of the American Society of Neuroradiology, died of metastatic carcinoma on July 22, 1992. In his passing, radiology and neuroradiology lost a guiding light who profoundly influenced the nature and growth of our specialty and subspecialty over the past half-century.

By nature quiet, modest, and self-effacing, sincerely skeptical of unsubstantiated claims and superficial explanations, Harold Peterson emphasized to his students and audiences that "radiological diagnosis should be based solely on radiological findings," a maxim that is as applicable for radiologists today as it was nearly 30 years ago when he stated it in his 1964 presidential address to the American Roentgen Ray Society entitled "First a Radiologist" (1). Although by no means rejecting the "clinical approach" to diagnosis that includes relevant clinical, radiologic, and laboratory information, he decried the tendency on the part of some radiologists to be unduly biased by the purported clinical and laboratory picture without "first completely exhaust(ing) our own diagnostic methods, extracting every bit of information possible from each procedure we do." In his practice and in his teaching, he insisted on a thorough and meticulous radiologic examination that would enable the radiologist to render independently and impartially a truly positive report with a high level of confidence. In this respect, he was fond of quoting Merrill Sosman, revered teacher and chairman of radiology at the Peter Bent Brigham Hospital in Boston, who had once stated, "The gallbladder is functioning and contains exactly four gallstones, indubitably, by God."

This insistence on thoroughness, meticulousness, and accuracy in examining and analyzing radiologic images bespoke the essential honesty and integrity of Dr Peterson's character and was, I believe, his most important legacy to those of us who were fortunate to have studied and worked with him. However, it was by no means his only notable impact on the development of radiology. Largely self-taught in the fledgling subspecialty of neuroradiology, he assembled in November 1939 the entire complement of neuroradiologists in the United States (four in number: Merrill Sosman, Cornelius Dyke of the Neurological Institute of New York, John Camp of the Mayo Clinic, and himself) at the University of Minnesota's Center for Continuing Education and presented the world's first postgraduate course in neuroradiology, a 3-day symposium that at-



Harold O. Peterson, MD, 1909–1992

tracted an audience of 52 physicians. In 1940, stimulated by his former mentor in Boston, Aubrey Hampton, he performed the first complete myelogram via percutaneous lumbar puncture, examining the entire thecal sac up to the foramen magnum with lipiodol and then completely aspirating the entire aliquot of oily contrast medium before removing the needle (2). In the 1940s and 1950s he developed the procedure of myelography to a fine art. In lectures and refresher courses over a span of three decades, he taught his approach and standards for this procedure to literally thousands of radiologists, always emphasizing the importance of careful meticulous technique, not only for the comfort of the patient but also to obtain a complete examination on which the diagnosis could be made with assuredness and a high level of confidence (3). In the first

¹ Department of Radiology, State University of New York Health Science Center, Syracuse, NY 13210.

edition of his classic textbook *Myelography*, Robert Shapiro referred to Harold Peterson as "that masterful myelographer" and expressed his appreciation to Dr Peterson "for teaching me his technique" (4). Additionally, it is probably not so well known that Pete was the first person to perform percutaneous puncture of a renal cyst under fluoroscopic control; he was a strong believer in the radiologic method and had a major influence on the development of radiological "special procedures" in this country. His 1961 Caldwell Lecture to the American Roentgen Ray Society was entitled "The Radiologist and the Special Procedures" (5).

Early Years

Harold Peterson was born in the small town of Dalbo, Minnesota, some 50 miles north of the Twin Cities, on April 13, 1909, the second of four children of parents of Scandinavian extraction. His mother was of Swedish origin; his father, a traveling salesman for a grocery distributor, was of Norwegian heritage. In Minnesota in the early part of the 20th century, the rivalry between Swedes and Norwegians was still strong and often served as the background for several of Harold's humorous stories in later years. However, his was a tranquil and supportive family life during his boyhood years in Minneapolis, and he advanced rapidly through the public schools of that city, graduating from Roosevelt High School at the age of 16. Being too young to get a full-time job, he did the next-best thing and enrolled instead at the University of Minnesota, intending (at his father's suggestion) to obtain a degree in pharmacy. One of the required first year courses in the University's prepharmacy curriculum at the time was Latin. His teacher in Latin, a Professor Cram, was impressed with this quiet and reserved but obviously highly capable young man and inquired whether Harold had considered other career choices besides pharmacy, listing medicine, the law, the ministry, teaching, and science as possibilities. At that key moment, the young student changed his major to premed and promptly took the streetcar downtown to find a summer job in the medical field.

He was successful in his quest and secured a position as a laboratory assistant at the Hennepin County tuberculosis sanatorium in Glen Lake, Minnesota, 15 miles southwest of downtown Minneapolis. Here he remained working full-time in the summer and part-time during the school year for the next 7 years. He resided in staff quarters at Glen Lake and joined other young people in that community in a youth orchestra (he played the violin) that practiced evenings in the auditorium of the sanatorium. One evening, when the players were inadvertently locked out of the auditorium, they adjourned to practice at the home of the group's pianist; here, Harold first met Margaret Ferris, the vivacious younger sister of the pianist. As he told the "incredible love story" in later years, he took one look at Margaret, missed a few more notes than usual on the violin, and then began a 7-year courtship while he completed his studies at the University of Minnesota Medical School and she obtained her teaching certificate from Mankato State Teachers College (now Mankato State University) (Fig 1).

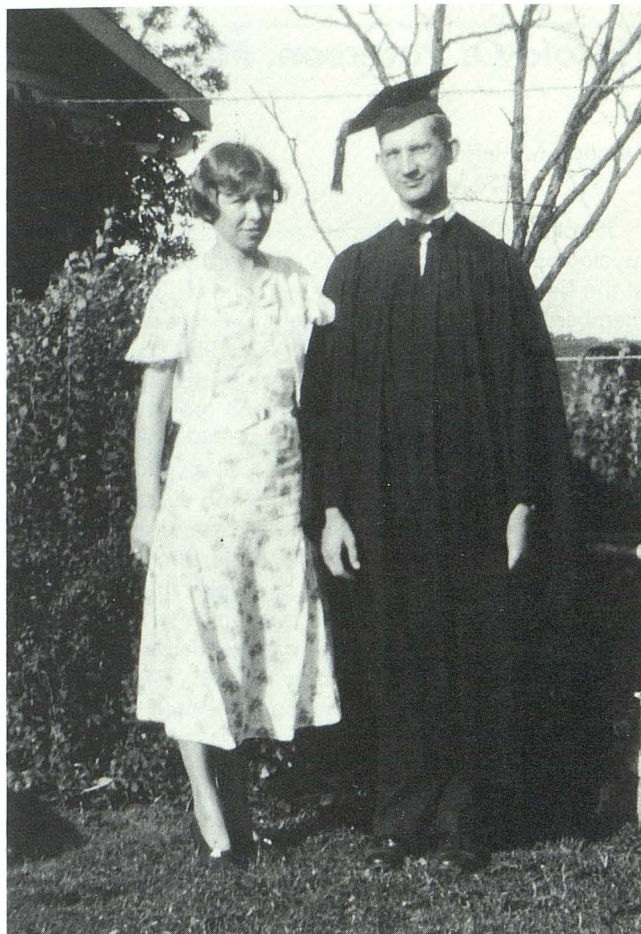


Fig. 1. Harold O. Peterson and Margaret Ferris on the occasion of Harold's graduation from the University of Minnesota Medical School in June 1933.

In July 1933, Harold began his internship at the Kansas City (Missouri) General Hospital. Shortly after his arrival, he learned that the hospital's radiologist, Dr David Dann, ran a course in x-ray technology. Harold managed to convince Margaret that she should enroll in this course. As a part of this course, Dr Dann would review the films of the day each afternoon with the student technicians. Harold began to attend these conferences on a regular basis, for they gave him his only regular opportunity to see Margaret. Dr Dann took note of the young intern's apparent interest in the specialty of radiology. Many years later, at a special dinner honoring Dr Peterson with Dr Dann in attendance, Harold publicly admitted that his interest at the time was not so much in viewing the x-rays as in seeing Margaret! In the summer of 1934, the young couple was married in Glen Lake by Margaret's father, Reverend J. O. Ferris.

Radiology Residency

Dr Dann was nonetheless impressed by the young physician. He inquired about Harold's interest in radiology as a career, indicating that he might be able to arrange a 2-year residency for the young intern with Dr George W. Holmes

and his faculty at the Massachusetts General Hospital in Boston, where he himself had trained a few years earlier. When Harold replied in the affirmative, the arrangements were made, and the young couple moved to Boston. He began his residency in radiology in Dr Holmes's department on January 1, 1935. In the ensuing 2 years, he immersed himself in all aspects of the emerging specialty, including radiation therapy as well as diagnosis. His mentors included such notable and memorable teachers as Aubrey Hampton in chest radiology and Richard Schatzki in gastrointestinal radiology. His major clinical research interests during his residency were in the detection of ureteral calculi on plain films of the abdomen and pelvis and in the diagnosis of gastric cancer on barium studies of the upper gastrointestinal tract. He published a study with Dr Holmes on "Roentgen Analysis of Cases of Ureteral Stone" in the *American Journal of Roentgenology* in 1937 (6). During his residency, he took little note of the skull or spine, although he did attend an evening series of teaching sessions in neuroradiology at the Peter Bent Brigham Hospital, presented by Dr Sosman to all of the radiology residents in the Boston area. This course was mainly concerned with plain films of the skull and spine but also included myelography, pneumoencephalography, and ventriculography; arteriography was not an accepted procedure in the United States before World War II. Sosman, who had worked with the legendary neurosurgeon Harvey Cushing in the late 1920s and 1930s, made a deep impression on the young resident, who in later years was fond of recalling the senior radiologist's observation that "we see that which we know." For Harold Peterson, this was a stimulus to learn (and know) more.

Return to Minnesota

As he approached the end of his residency (Fig 2), Dr Peterson was offered a position as instructor on the faculty of the University of Minnesota Medical School. Leo G. Rigler, one of the veritable giants in the history of radiology, had only 2 years earlier established a separate department of radiology at the University of Minnesota Hospitals and Clinics in Minneapolis. In addition to his own renowned diagnostic abilities, Leo Rigler also had the knack of recognizing genius and developed an outstanding cadre of teachers and investigators during his 30 years tenure at Minnesota. By the time he retired from the chairmanship at Minnesota in 1957, Dr Rigler had trained more individuals who subsequently became chairs of academic departments of radiology than anyone else in the field at the time.

When Harold Peterson joined Dr Rigler in Minneapolis on January 1, 1937, the radiology faculty of Minnesota doubled in size. The department, then located on the fifth floor of the Eustis wing of the University Hospital, consisted of a total of five rooms, including the reading room. Harold's beginning salary was \$75 a month, and Dr Rigler was not earning a whole lot more. When Rigler inquired of his new associate in which area of radiology he would like to concentrate his efforts, Peterson suggested the genitourinary and gastrointestinal systems, but the chief indicated



Fig. 2. Harold and Margaret Peterson at Niagara Falls in September 1935 when Harold was a resident in radiology at Massachusetts General Hospital.

those were his own main fields of interest. Peterson then suggested chest radiology, but Rigler responded that he liked chest also and then stated, "I want you to be interested in neuroradiology" (7). Thus began Harold Peterson's career in neuroradiology.

Despite such an inauspicious beginning, this seed was to bear rich fruit on exceedingly fertile soil. It was a time of discovery, and Harold Peterson was well equipped to learn. As he stated, "I think I lived at the right time in radiology. Almost everything you did was new." He formed a close alliance with Dr William T. Peyton, the university's first chief of neurosurgery, and together they collaborated in correlating the radiologic and gross anatomic findings in tumors of the brain and spinal cord. Dr Peyton (who had trained as a general surgeon) also had been requested by his chief, Dr Owen Wangenstein, to concentrate his efforts on the development of the relatively new field of neurosurgery. I know of few individuals whom Dr Peterson respected more than Dr Peyton. Both men were exceedingly honest, straightforward, and meticulous in their work, and with time both earned singular positions of respect and recognition in their specialties, establishing their departments as leaders in their respective fields. Also important in this

milieu was Dr Abe B. Baker, a dynamic and energetic neurologist and neuropathologist who was a primary force in the establishment of neurology as a specialty separate from psychiatry (thereby becoming the first chairman of the Department of Neurology at Minnesota) and in 1950 founded the American Academy of Neurology.

Teaching Neuroradiology

In 1939, after less than 3 years on the faculty, Harold Peterson organized the first postgraduate course in the world on the topic of neuroradiology. As he himself noted in this journal last year, the course included a symposium on protruded intervertebral discs, but he did not participate, because "I was just beginning to develop my interest in this area and had not yet embarked on my life-long interest in and involvement with myelography" (7). In 1940, he began an evening lecture and film demonstration course in neuroradiology primarily for residents in neurology and psychiatry who wanted to brush up for their board examinations. When he again presented this course the following year, the residents in radiology and neurosurgery also attended. This series of film demonstrations and lectures eventually became a biannual categorical review course with weekly 2-hour sessions on Tuesday evenings. As Dr Peterson's teaching film library in neuroradiology grew, so did the length of the course until, in the 1960s and early 1970s, it encompassed the entire academic year from early October through early June.

No less a tour-de-force were his refresher course presentations to the annual meetings of the American Academy of Neurology. Asked by his colleague Abe Baker in 1950 to present a refresher course on the entire field of neuroradiology in one session to this new society at its first meeting, he used his teaching film material and conducted a very long teaching session. The course was immensely popular, eventually became legendary, and continued annually until 1979. As the case material increased, the teaching sessions progressively lengthened until they lasted between 12 and 18 hours, beginning at 8:00 or 9:00 am and concluding near (or sometimes after) midnight. It was my privilege to assist him in these sessions from 1968 onward, and I can attest that these courses were very well attended and that many of our audience stayed with us to the bitter end. As the day went by, Dr Peterson's voice would grow hoarse, and he would spray his throat with a cocaine spray that "acted very well on my larynx as well as on my cerebrum."

Entering Private Practice

In October 1940, Dr Peterson elected to leave his full-time academic position at the University to enter the private practice of radiology in Saint Paul with Doctors Edward Schons and J. Paul Medelman (now St Paul Radiology, PA). Although he never discussed his reasons for this move with me, I am reasonably sure that the very limited remuneration available at that time to full-time faculty in the clinical specialties at the University of Minnesota Medical

School played an important role in his decision. Within 3 months, he was made head of the Department of Radiology at the Charles T. Miller Hospital, a large and highly regarded institution, and this remained his primary responsibility until mid-1957 (Fig 3). During World War II, he also worked at the Saint Joseph's and Bethesda Hospitals in Saint Paul, and in 1948 he became head of radiology at the Saint Paul Children's Hospital, a position he also maintained until mid-1957. It is probably not very well known that Harold Peterson was not only a founding member of the ASNR but also a charter and founding member of the Society of Pediatric Radiology.

During his nearly 17 years in private practice in Saint Paul, while devoting full time to his patient care responsibilities in that community, Harold Peterson maintained his ties with and strong involvement in neuroradiology at the University Hospital. This was at the invitation and with the full support of Drs Rigler, Peyton, and Baker. He would spend two or three several-hour sessions per week in the late afternoon or early evening reviewing the difficult cases that the residents and faculty had saved for him. It was during this era that he developed his strong interest in myelography and in the diagnosis of disk herniation, correlating his observations on fluoroscopy and on spot films with the observations of surgeons whom he trusted at both the University and the private hospitals. In his writings, lectures, and courses, he constantly reminded his readers and listeners of the principles he had developed in refining myelography to a fine art: that making an accurate diagnosis with confidence on myelography required that the area of the thecal sac in question be fully opacified and completely displayed on both anteroposterior and horizontal beam ("cross-table") lateral projections obtained without moving or turning the patient, that spot films of this region be obtained in several degrees of obliquity and thoroughly examined, and that with patience, gentleness, and appropriate positioning of the patient and the needle, essentially all of the injected aliquot of pantopaque could be aspirated from the subarachnoid space without causing pain or



Fig. 3. Harold Peterson dictating the report of a lumbar myelogram at Miller Hospital in December 1948.

significant discomfort (8). As his experience grew, he became more and more convinced that the majority of extradural defects in the contrast-filled thecal sac in adults were not caused by disk herniation but rather by degeneration of the disk with attendant bulging of its margins, thickening of the adjacent ligaments, and development of osteophytic spurs. He defined diagnostic criteria that enabled differentiation by myelography between disk bulging and disk herniation (9) and thereby laid the foundation for our current understanding of these processes, now made immeasurably easier by today's cross-sectional imaging modalities.

So it was that during the 1940s and 1950s Harold Peterson's talents and expertise were embraced by both the private and the academic worlds in the Twin Cities. He inspired a remarkable degree of confidence in his competence as both radiologist and teacher. His continued service and teaching at the University brought him successive promotions from clinical instructor to clinical assistant and associate professor. He was made clinical professor of radiology in 1956. Although he was not a prolific writer, his work in neuroradiology gradually gained national and international recognition.

Return to the University

It was therefore not surprising that, when Leo Rigler elected to leave the University of Minnesota in 1957 after 30 years of immensely productive leadership of its radiology department, the search committee should recommend Harold O. Peterson, MD, as his successor as the second chairman in the history of this department. After a long and soul-searching consideration of Dean Harold S. Diehl's offer, Dr Peterson accepted the invitation and became professor and head of the Department of Radiology on July 1, 1957. He inherited a strong faculty, and under his watchful eye the department grew and added strength in teaching and clinical research.

Neuroradiology: Seizing the Limelight

In the early 1960s, neuroradiology seized the limelight and achieved full recognition in North America as an essential component of the clinical neurosciences. The work of Ernest Wood and Juan Taveras at the Neurological Institute of New York and of Mannie Schecter at Saint Vincent's Hospital and Albert Einstein Medical Center in New York laid the groundwork for this recognition and for the willingness of the National Institute of Neurological Diseases and Blindness (NINDB) in 1962 to underwrite the expansion of postresidency fellowship training programs in neuroradiology. Juan Taveras's leadership role in forming the American Society of Neuroradiology in 1962 and his dynamic organization of the seventh Symposium Neuro-radiologicum in New York in 1964 were further major factors in the emergence of the subspecialty of neuroradiology in North America. At the same time, a technological renaissance was taking place with the introduction and refinement of serial rapid-film changers and mechanical

injectors for cerebral angiography and of specialized instrumentation for pneumoencephalography that permitted tomography or autotomography. Simultaneously, the development of effective and sophisticated techniques for catheter angiography, first by the Swedes and then by American radiologists including Hans Newton, Bill Hanafée, and Kurt Amplatz, permitted selective visualization of all the brachiocephalic arteries percutaneously with one arterial puncture and at a single sitting (10).

With Harold Peterson as Program Director, the University of Minnesota was one of 11 departments nationally to be designated an NINDB traineeship program site in neuroradiology in the early to mid-1960s. John Hodak, currently senior neuroradiologist at the Barrow Neurological Institute in Phoenix, was Dr. Peterson's first trainee, beginning his fellowship in July 1965, and I was privileged to be awarded the second traineeship, beginning my postresidency subspecialization in January 1966. In July 1966, Eugene Binet and Larry Gold became our third and fourth NINDB neuroradiology fellows.

At about this time, several leaders in neurosurgery became seriously concerned about the emergence of neuroradiology and the "takeover" of invasive diagnostic procedures by the newly trained young neuroradiologists. Nevertheless, at first gradually and then remarkably quickly in the late 1960s, those neurosurgeons who worked with the newer neuroradiologists became impressed with their knowledge and technical skills with the catheter and realized that the diagnostic management of their patients with greater accuracy and lesser patient morbidity was enhanced by entrusting the performance and interpretation of these procedures to the neuroradiologist. At Minnesota especially, this was no mean accomplishment; that it was effected so smoothly is a tribute to the firm but reserved leadership of Harold Peterson. Although he himself (to the best of my knowledge) never performed a catheter arteriogram (his colleague Dr Amplatz was a highly skilled and effective mentor in this technique for his fellows), his diagnostic judgment and interpretive skills were the key to our success. By 1968 or 1969, direct carotid or vertebral sticks by the neurosurgeons for arteriography had become a rarity at the University of Minnesota. Nationally, this transformation was more gradual, extending well into the 1970s, but as the number of graduates of NIH-sponsored neuroradiology traineeships increased and as these graduates in turn occupied faculty and staff positions in neuroradiology in more and more institutions, the patterns of practice progressively changed.

Emphasis on the Basics

In his teaching, whether reviewing cases one-on-one with a resident or fellow or addressing a large audience at a conference, refresher course, or lecture, Dr. Peterson always emphasized what were to him the basics: know thoroughly the normal radiographic picture, including the variants of normal ("when in doubt, call it normal"); study the film very carefully, forming your opinion from the evidence on the film; be skeptical of the reputed clinical

history or laboratory reports when these differ from the findings on the film; make your reports clear and concise, describing only the facts as you see them on the films and avoiding hedging or speculation; and, above all else, be honest. How well I recall sitting by his side in the "private" reading room at the University Hospital while he quietly and carefully studied the films, tapping his knuckles on the surface of the countertop until he reached a concise conclusion. He never hesitated to say "I don't know," but such occasions were not frequent.

His gentle dry sense of humor truly blossomed when he spoke before large groups. Always unpretentious, he was a remarkably effective humorist and storyteller as a moderator or speaker at courses or lectures. He would tell the story of the time he was to speak in a large hall and inquired at the start whether the people in the back rows could hear him; when many hands were raised at the rear indicating that he was not clearly audible, several people in the front row promptly proceeded to get up and move to the back! He loved to make fun of himself and his fellow Minnesotans of Scandinavian origin. A particularly favorite story was that concerning one Torkel Skrutrud who was walking down Hennepin Avenue in downtown Minneapolis carrying a knapsack when he met his friend Sven, who inquired what was in the knapsack. "Shickens," replied Torkel, "and if you can guess how many, I'll give you both of them." Whereupon, after a long pause, Sven inquired, "Six?" These and similar stories kept his audiences tuned in (when they were not rolling in the aisles with laughter) and earned for him the well-deserved title of "the Will Rogers of radiology."

A Golden Era

In retrospect, the late 1950s and 1960s was a golden era for radiology and for medicine in the United States. Hospitals were expanding, and there was a national consensus to create more and better facilities and opportunities for health care. This led to the emergence on a national level of subspecialties within the field of radiology endorsed by the agencies of the federal government. Neuroradiology was among the earliest of the radiologic specialties to achieve such recognition; the role of the above-mentioned NINDB traineeships in effecting the recognition of this field of endeavor cannot be overemphasized.

Harold Peterson's words and deeds inspired confidence from his clinical colleagues, and it was not at all surprising to the faculty of his department when he was selected by his fellow clinical department chairs in 1965 to be the first chief of staff of University Hospitals and was reelected to the post in 1966. While neither emotional nor remonstrative, he clearly conveyed to all those with whom he worked an attitude of sincere concern that bespoke integrity and humanity.

The Perfect Support

His wife Margaret provided the perfect support for his life and work. Exuberant and vital, intensely interested in

the world around her and the people who worked with and for her husband, Margaret Peterson was a pillar of support and encouragement for Harold and their family. Together, they raised four children who have themselves made significant contributions to their communities and professions: John, now retired; Richard, currently chief executive officer of Fairview-Riverside Medical Center in Minneapolis; James, professor of law and director of the Legal Assistance to Minnesota Prisoners (LAMP) program at the University of Minnesota Law School; and Judith Peterson Lyons, executive director of the National Consortium on Inter-professional Education and Practice, a marriage and family counselor who is married to the Reverend David P. Lyons, senior minister of the First United Methodist Church in Madison, Wisconsin. The family currently includes eight grandchildren.

Margaret Peterson loved people. She shared with Harold a deep and abiding religious faith and was very active in the activities of their Methodist congregation. She became actively involved in the auxiliaries of the medical societies in their community, eventually becoming president of both the Ramsey County (Saint Paul) Medical Society Auxiliary and the Minnesota State Medical Association Auxiliary. Margaret was intensely interested in human rights issues. When, in the late 1930s the black contralto Marian Anderson was invited to present a concert in the Twin Cities and the major hotels in Minneapolis pleaded "no space available," Margaret unhesitatingly spoke out, inviting the famous artist to stay in her home. When Harold became department head at the University, she undertook to organize a radiology wives' club that played a major role in welcoming and integrating new residents, fellows, and faculty, in providing a sense of community and caring within the expanding universe of radiology at Minnesota, and in hosting the social activities associated with the department's annual postgraduate course, by then clearly established as one of the major national continuing education meetings in the specialty. She also established a nationwide reputation in yet another area: intensely interested in collecting dolls since early childhood, she built over the years a truly impressive collection of antique dolls that displayed the history of fashion.

National Recognition

Dr Peterson's impact nationally continued to grow after he assumed the chairmanship at the university. He was a very effective and memorable speaker to large groups, interlacing scientific observations and analysis with wry humor. In the years between 1956 and 1975, he was invited to present virtually every major named lecture in the radiologic universe of North America, including the Pan-coast Lecture (Philadelphia, 1956), the Freedman Lectures (Cincinnati, 1959), the Caldwell Lecture (American Roentgen Ray Society, 1961), the Annual Lecture of the Canadian Association of Radiologists (Winnipeg, 1962), the Fred J. Hodges Lecture (Ann Arbor, 1962), the Russell Carman Lectures of the St Louis Medical Society (1962) and the Minnesota Radiological Society (1968), the Leon Menville

Lecture (New Orleans, 1963), the Ross Golden Lecture (New York, 1964), the Leo Rigler Lectures of the Israel Radiological Society (Tel Aviv, 1965) and the University of Minnesota (1972), the Kirklin-Weber Lecture (Mayo Clinic, 1965), the George Holmes Lecture of the New England Roentgen Ray Society (Boston, 1965), the Cornelius Dyke Lecture (New York, 1971), the Herbert Stauffer Lecture (Philadelphia, 1972), the Lester Paul Lecture (Madison, 1972), and the L. Henry Garland Lecture of the California Radiological Society (1975).

In the late 1950s and through the 1960s, Harold Peterson earned increasing recognition from the leading societies and organizations in his specialty and in clinically related fields. He was elected a trustee of the American Board of Radiology in 1959 and was reelected to this premier position in 1965, completing the legally mandated maximum of 12 years service on the Board in 1971. He was a founding and charter member of the American Society of Neuroradiology in 1962 and was elected the fifth president of this society in 1967. He was an extraordinarily active leader of the American Roentgen Ray Society, serving as director of its instructional courses from 1957 through 1975 and as its president in 1964–1965. He was a member of the Board of Chancellors of the American College of Radiology from 1958 (Fig 4) through 1962 and again from 1965 through 1969, served as vice president of the College in 1963–1964, and received the College's gold medal in 1971. He was president of the Minnesota Academy of Medicine in 1971. He was awarded honorary membership in the American Academy of Neurology and was made an associate member of the Harvey Cushing Society (now the American Association of Neurological Surgeons). Over the years, in recognition of his extraordinary contributions to radiology and neuroradiology, he was made an honorary member of the radiologic societies of Connecticut, Texas, Indiana,

Detroit, and the Pacific Northwest. In 1969, on the occasion of his leaving the chairmanship at the University of Minnesota, he was honored by the Rocky Mountain Radiological Society with a special meeting presented by his former residents and colleagues. Many of these presentations were published in the December, 1969 issue of *Minnesota Medicine*, which was dedicated to Dr Peterson.

Striving for Perfection

Apart from his profession and his family, Dr Peterson's major interest and avocation was golf. He loved the game and approached it with the same attitude and philosophy that he applied to radiology: thoroughness, consistency, and careful study, always striving to perfect his swing and his putting by meticulous self-analysis and practice. He was indefatigable in his pursuit of consistency and in the correction of those few errors that, from time to time, he perceived in his game. It was notable that, at the age of 78, he was able to "shoot his age," a feat not attained by many. At that same age, he won the "great shootout" at his home club, Midland Hills Country Club, and became club champion!

In 1969, as always the careful observer, he noted the presence of a very slight degree of scleral icterus and sought the help of his family physician. Diagnostic work-up revealed an obstruction at the orifice of the common bile duct which was found at surgery to be a very small carcinoma originating in the ampulla of Vater. He made a remarkable postoperative recovery and returned to full-time work and practice, but shortly thereafter he determined to give up his administrative duties as department head and return to the practice and study of neuroradiology. After a careful search, Dr Eugene Gedgaudas, his

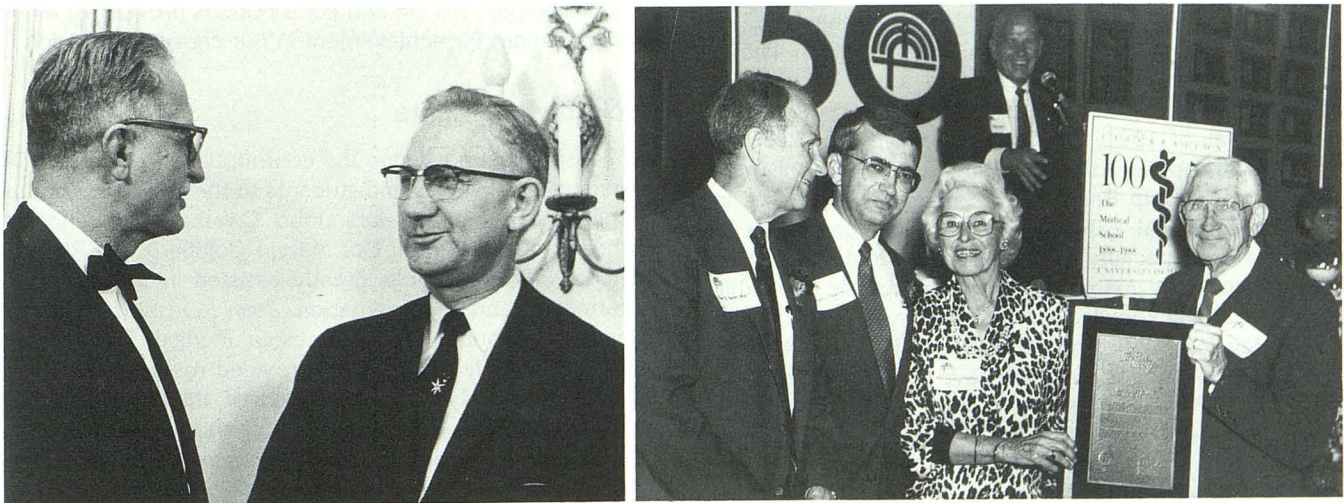


Fig. 4. On being elected to the Board of Chancellors of the American College of Radiology in February 1958, Dr Peterson receives the congratulations of Earl E. Barth, MD, of Chicago, the Chairman of the Board.

Fig. 5. In 1988, the Minnesota Medical Foundation celebrated its 50th anniversary and the 100th anniversary of the founding of the University of Minnesota Medical School at its annual meeting. Harold and Margaret Peterson are pictured here receiving the Trustees Society award from Paul G. Quie, MD, professor of pediatrics and president of the Foundation (*far left*), and Richard Sauer, PhD, interim president of the University (*left*).

long-time close associate, was selected as the new department head.

The decade of the 1970s was particularly pleasant for Harold and Margaret Peterson. Harold continued to enjoy his work and teaching in neuroradiology. The growing work load and the advent of new technology, notably the discovery of computed tomography and its early clinical application to noninvasive diagnosis of diseases of the central nervous system, provided him with immense stimulus and satisfaction. His remarkable abilities as speaker and careful investigator kept him in demand at major meetings and courses. The publication in 1971 of *Introduction to Neuroradiology*, a succinctly worded survey text written in collaboration with this former student, reflected his knowledge and approach to the teaching and practice of this increasingly clinically important subspecialty (11). Although his retirement in 1977 freed him to spend more time with his golf and his family, he maintained an active interest and involvement in neuroradiology through the entire decade of the 1980s and spent several winters as visiting professor at the University of Texas medical campuses in Galveston and San Antonio.

Recognition and Remembrance

In recognition of his manifold contributions over some 60 years to the University of Minnesota Medical School, the University Hospital, and the Department of Radiology, the numerous friends and colleagues of Dr Peterson determined in the late 1980s to establish an endowed professorship in his honor. Characteristically, the appreciative honoree insisted that this recognition include his wife, and so it was entitled the Margaret F. and Harold O. Peterson Professorship in Neuroradiology. The needed funds were quickly subscribed through the Minnesota Medical Foundation (Fig 5). Doctor Richard Latchaw, a graduate of the University of Minnesota Medical School, a former faculty member, and a highly regarded leader in the field, was invited by the new department head, Dr William Thompson, to return to the University and today occupies the Peterson chair and leads the neuroradiology section.

In the fall of 1991, the American College of Radiology met in Minneapolis. As the host organization for this meeting, the Minnesota Radiological Society mounted an impressive historical exhibit featuring the "greats" in the history of our specialty who had worked and taught in the state. Harold and Margaret Peterson attended the exhibit that formally acknowledged Harold's major contributions to the development of neuroradiology. This was to be the last time that many of us would have the privilege of seeing Dr and Mrs Peterson together in good health. Within a few weeks, Margaret was struck down by a devastating ailment that progressed rapidly and was finally diagnosed as Jacob-Kreuzfeldt disease. She died in late March 1992. They had been married for 58 years. At her memorial service, her normally reserved and introspective husband did not hesitate to speak of their "incredible love affair" and of the support and fulfillment he had enjoyed for their entire married life. Indeed, he confided to a close friend, he did not know how it would be possible for him to survive

without Margaret. Tragically, these words were to prove prophetic; within a few weeks, he developed a pleural effusion which was found to be malignant. Despite a thorough search for a primary site, no site of origin could be identified. This troubled Dr Peterson immensely. Despite his weakening condition, he continued to search for the source of his disease, even until his final days. At that time, when his daughter asked what she could give him to ease his discomfort, his prompt reply was "a few more brain cells, to figure this thing out." Harold O. Peterson died at the age of 83 years.

Nearly a quarter-century ago, on the occasion of Dr Peterson's retirement as the second head of the University of Minnesota Department of Radiology, his predecessor Leo Rigler wrote (12):

No one could better represent in so distinguished a manner the spirit of the true Minnesota physician and the roentgenologist than Harold O. Peterson . . . The son of immigrant parents, born in a rural community . . . Harold attained his present eminence by his own extraordinary effort and superior intelligence . . . The whole career of this distinguished son of Minnesota has been characterized by a determined truthfulness and a complete devotion to the ideals and best practices of American medicine. Coupled with a highly critical sense of his own limitations and those of radiology is his desire for perfection.

Harold Peterson did indeed seek perfection in all aspects of his life. By personal example, he taught his students that whatever task they determined to undertake should be fulfilled as well and as completely as they possibly could. The foremost characteristics by which I will remember him are his intellectual honesty, his integrity, and his determination to persevere. This humble and modest man was a true pioneer in the development of the art and science of neuroradiology. His life and contributions provide for all of us a paradigm for achievement in our chosen profession.

Acknowledgments

I wish to acknowledge the contributions of many of Dr Peterson's colleagues and students to the substance of this reminiscence, notably Drs John Coleman and Thomas Johnson of Saint Paul. Drs Marvin Goldberg and Richard Latchaw of Minneapolis greatly assisted in the quest for information and documentation. Jean Murray, Director of Communications of the Minnesota Medical Foundation, searched her files and kindly provided me with Figure 5. Last but certainly not least, heartfelt thanks are due to Judith Peterson Lyons and her brothers, who shared with me their thoughts and recollections as well as the first four illustrations in this article.

Editor's Note: Dr Kieffer, Chairman of the Department of Radiology at State University of New York Health Science Center and a past-president of the American Society of Neuroradiology, was a trainee, colleague, and long-time personal friend of Dr Peterson.

References

1. Peterson HO. First a radiologist—the president's address. *AJR: Am J Roentgenol* 1964;92:1227–1231
2. Juers EH, Peterson HO. A simple method for the removal of iodized oil from the spinal subarachnoid space. *Minn Med* 1942;25:270–272
3. Gold LHA, Leach CG, Kieffer SA, Chou SN, Peterson HO. Large volume myelography: an aid in the evaluation of curvatures of the spine. *Radiology* 1970;97:531–536
4. Shapiro R. *Myelography*. Chicago: Year Book, 1962
5. Peterson HO. The radiologist and the special procedures: Caldwell lecture, 1961. *AJR: Am J Roentgenol* 1962;88:4–20
6. Peterson HO, Holmes GW. Roentgen analysis of 100 cases of ureteral stone. *AJR: Am J Roentgenol* 1937;37:479–483
7. Peterson HO. The early history of neuroradiology at the medical school of the University of Minnesota, 1937–1939. *AJNR: Am J Neuroradiol* 1992;13:873–877
8. Peterson HO. Myelography—past and present (1935–1968). *Minn Med* 1969;52:1881–1887
9. Peterson HO, Kieffer SA. Radiology of intervertebral disc disease. *Sem Roentgenol* 1972;7:260–276
10. Amplatz K, Resch J, Hilal S. Catheter approach for cerebral angiography. *Radiology* 1963;81:576–583
11. Peterson HO, Kieffer SA. *Introduction to neuroradiology*. Hagerstown: Harper and Row: 1972.
12. Rigler LG. Dr. Harold O. Peterson. *Minn Med* 1969;52:1927–1928