

Fall 1984

Focal Spot, Fall 1984

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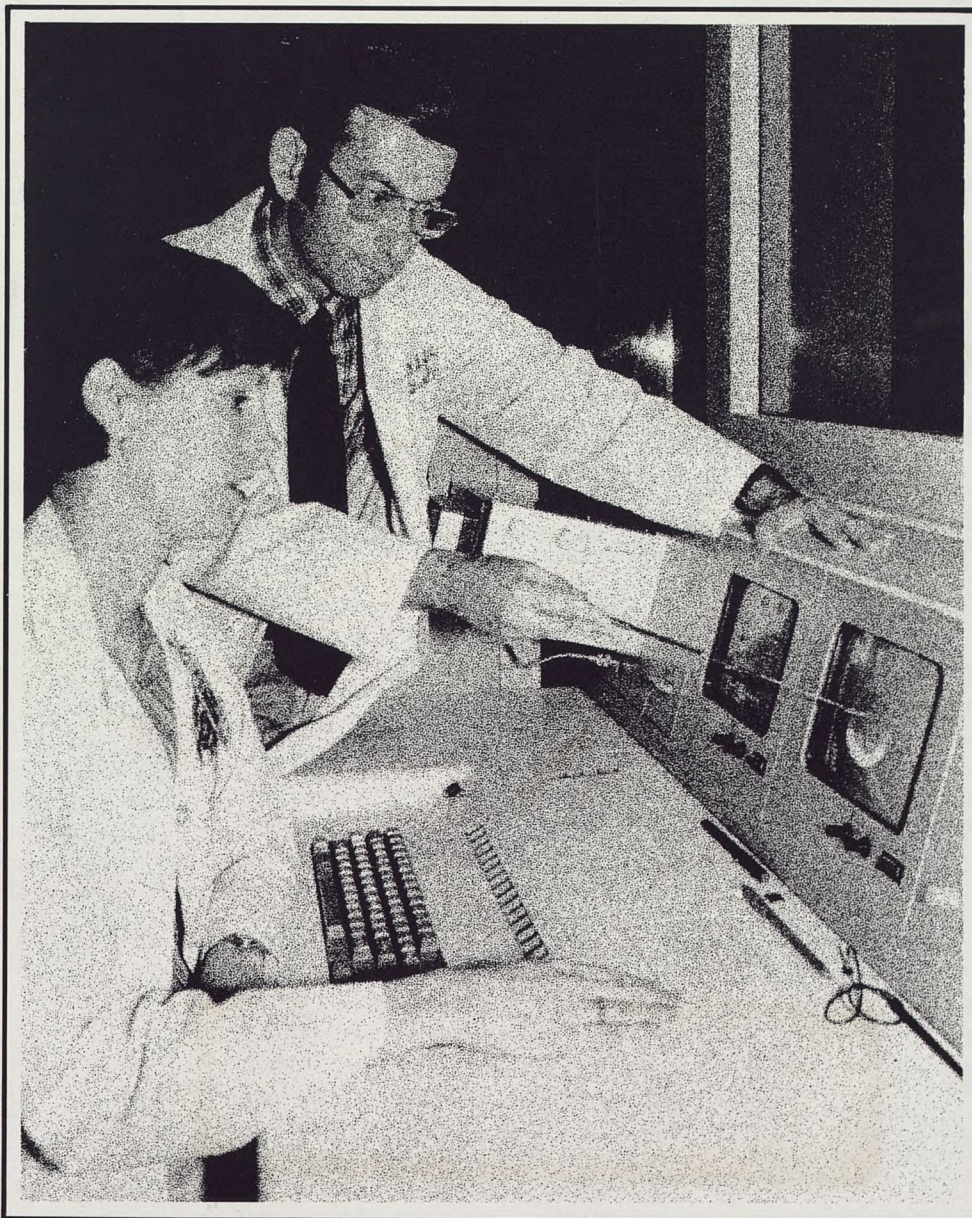
SPOT

M A G A Z I N E

Mallinckrodt Institute of Radiology

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Mallinckrodt: A Teaching and Learning World

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A Commitment to Education at Mallinckrodt Institute of Radiology

by Ronald G. Evens, M.D., director



This issue of the **Focal Spot** emphasizes our dedication to teaching and education. The numbers and statistics are impressive. At any point in time, MIR has accepted responsibility for the training of more than 50 residents in radiology, 50 radiologic technology students, 20 medical students, 10 or more fully qualified radiologists undergoing additional

fellowship training for a year or more, several post-doctoral trainees in several scientific disciplines, and many short-stay visitors. We also staff or support a wide variety of teaching experiences to other medical specialties and allied health programs, both locally and nationally. The educational responsibilities and associated costs are great—and increasing; why does MIR do it?

There are three traditional components of an academic medical program—patient care, research, and education. It is certainly possible that any of the three can be successfully performed without the others, as demonstrated by the quality medical care provided at many non-teaching hospitals throughout the country, education junior colleges that are almost independent of medical facilities, and excellent research performed by industry. It is a challenge to perform any of the three components well

and only a few institutions have succeeded in performing all three with long-term success. Reaching a level of excellence as an academic health center has never been easy and is becoming more difficult because of cost and complexity.

There is a long list of requirements in order for an institution to be truly great in medical education. I will mention a few:

- *First, and foremost, it requires a dedicated group of teachers who sincerely desire to teach, have a significant amount of time available for academic challenges away from clinical practice, and who are knowledgeable about their specialty and willing to teach it to others.*
- *The students must be the very best as bright as possible; previously taught the fundamentals of science, math, the English language; study*

On the Cover



Stuart S. Sagel, M.D., Professor of Radiology, and diagnostic resident Dr. Janice Wann Semenkovich

A teaching and learning world, Mallinckrodt is ordered by the science of diagnosis and therapy, yet guided by the intangibles of attitude and humanity. Its mammoth network of research and scholarship extends to the reading room, the exam room, and the laboratory—any of which may serve as the “classroom.”

The TEACH

A teacher affects eternity; he can never tell where his influence stops. —Henry Brooks Adams.

Marilyn J. Siegel, M.D., recipient of the second annual Teacher of the Year Award at MIR, has a teaching theory which reflects her interest in solving problems, an attribute intrinsic to radiology.

“You start to teach when you review films with the residents. It would be easy just to say what the diagnosis is, but that doesn’t help them in the long run. An alternative approach is to begin with some very simple observations. Is the shape normal? Is the size normal? Even if the answers are incorrect, you’re teaching an ap-



Dennis Balfe, M.D., and Marilyn Siegel, M.D., Distinguished Teaching Award

skills; and with the personal goal of becoming the physicians and scientific leaders of the future.

- The capital resources and their costs are staggering—libraries, classrooms, laboratories, CT scanners, and MRI equipment. These resources must not only be on site, but available to students.

The very best academic medical centers have these resources and coordinate them into a special package to create the right kind of atmosphere for learning. Such centers must have the very best in patient care for two reasons—most importantly, for their patients whose short-term interest is to have a problem cured and their lives improved with little immediate concern for teaching or research. Outstanding patient care is also critically important for the education process as I strongly believe we can-

not teach our students how to be the best radiologist or technologist in the future without actually showing them how it's done currently.

Which of the three components (care, research, education) for academic medicine is the most important? There is no answer, because all three are cohesive and necessary to be the best. In the short-term, patient care is the most important for the benefit of the patient and to satisfy our responsibilities as physicians. Research is most important in the long-term, as the benefits of science will define the medical world of the future by controlling or defeating many diseases as we know them.

Education is important now and in the future. I personally find our educational responsibilities to be the most enjoyable, because my highest satisfaction comes from seeing the individual success of our younger

faculty and students. Watching the young, curious, and ambitious medical student develop into a compassionate and knowledgeable radiologist or inquisitive scientist, or observing the very young technology student develop the skills to serve patients with compassion, is a pleasure that only the teacher can experience. Everyone can be a better teacher to their children and friends, but the Mallinckrodt Institute faculty can have the satisfaction of teaching while they practice radiology.

Why does the Mallinckrodt Institute educate? Because, we must for the benefit of our current and future patients. We have the resources to teach and the challenge to do it well from Washington University. The responsibilities for education are not only to do the best for our students but for our patients who will need their services and skills. ■

TEACHING Commitment

proach. You're directing the residents, trying to get them to come up with the answers."

When asked what they most appreciated about Dr. Siegel's style of teaching, senior residents responded that it was her clarity of purpose; her organization of conference material, case examples, and film reviews around a central theme or problem. This approach, reflecting forethought and preparation, helped to make her conferences and case reviews "meaningful."

In addition, residents perceived Dr. Siegel as a "pleasant, outgoing, fun" person with whom it was easy to work. She was attentive to the residents, keeping their viewpoints in mind, and using her free time to give impromptu talks and feedback.

The warm personality evident in her

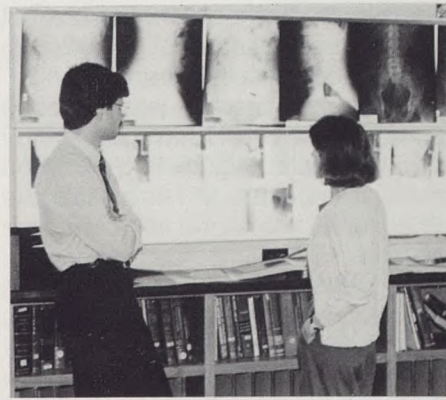
teaching is typical of Dr. Siegel. A native St. Louisan, she enjoys gourmet cooking, piano playing, working the New York Times crossword puzzle, and exercising on a stationary bicycle. She and her husband, **Dr. Barry Siegel**, chief of nuclear medicine at Mallinckrodt, make their home in the Central West End—but frequently travel to New York City, where she indulges in gourmet food, shopping sprees, and art exhibits.

Although her entrance into the medical field, and later into radiology, was unplanned, it is apparent that she has found her niche. Solving problems, and helping others learn to solve them, is a rewarding, if sometimes demanding, career.

Dr. Siegel has been previously commended for her teaching ability. Nevertheless, she feels that the

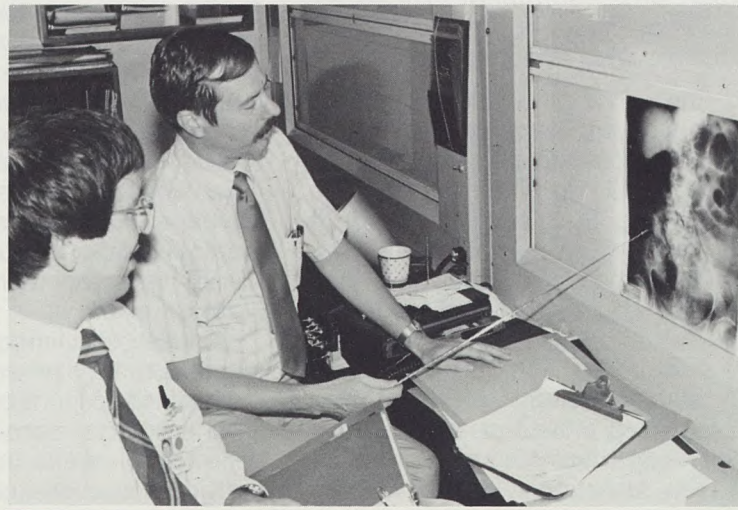
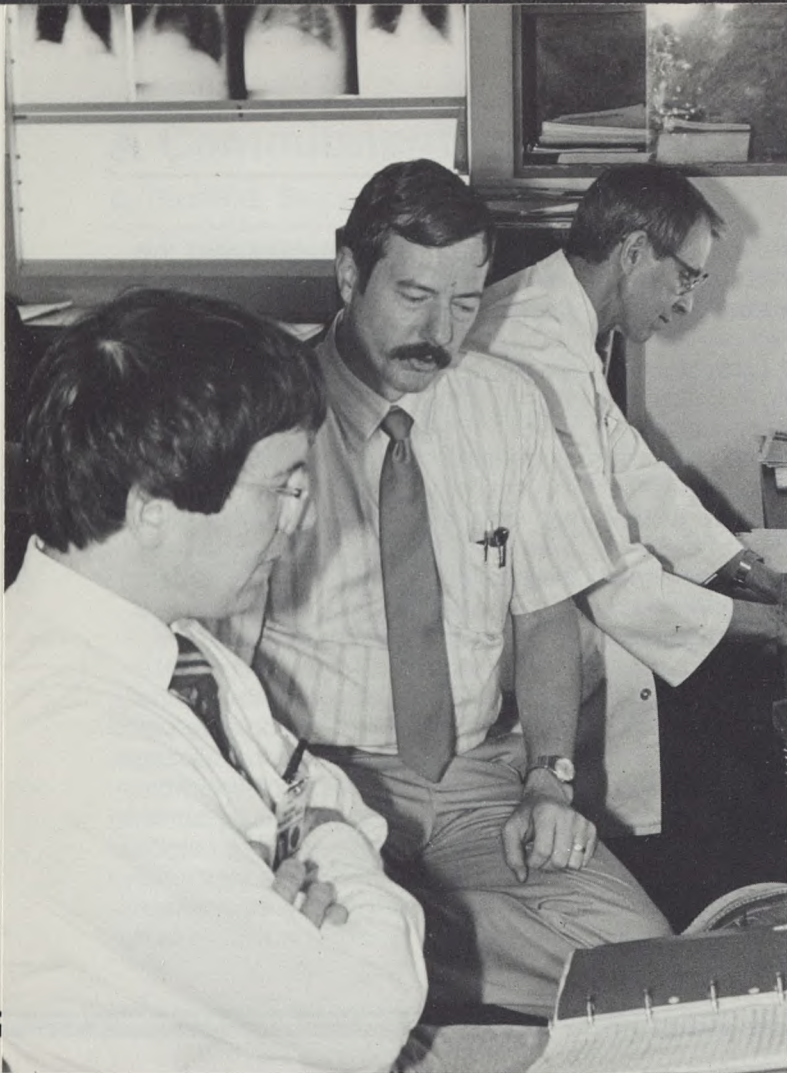
Teacher of the Year award is "a wonderful honor—an extra special award."

"I used to think that I had already earned my share of degrees and honors, but this one is a magnitude above the others." ■



Marilyn Siegel, M.D., Distinguished Teacher

The TEACHING



Dennis Balfe, M.D., Distinguished Teacher, 1983

There are nearly seven thousand hospitals of all sizes in the United States. Of these, fewer than one-fifth are situated in academic medical centers that have the enormous amount of resources and equipment required to maintain a quality medical education program.

Dennis M. Balfe, M.D., recipient of MIR's first Teacher of the Year Award in 1983, accents his teaching with a genuine interest in people and learning. "Wherever I have worked, from a Manhattan high school, to the unfamiliar countries of West Africa, to the academic world of medical institutions, I have learned through teaching others. Teaching at Mallinckrodt is a privilege because it provides the opportunity to learn from minds of extraordinary calibre."

Providing feedback through monthly reviews with each individual resident on GI service is an important part of

Dr. Balfe's curriculum. With the residents, he evaluates four criteria which he considers important to good radiology practice:

Diagnostic service to the patient: ability to successfully utilize available imaging resources in the most efficient and least stressful (to the patient) manner

Consultative service to referring clinicians: ability to effectively communicate findings and interpretations in a manner which facilitates problem-solving

Professional skill: ability to apply scientific knowledge to a problem; to make accurate observations and hypotheses

Technical skill: ability to perform the procedures of diagnosis.

These criteria reflect Dr. Balfe's interest in helping people, physicians as well as patients. Helping others and learning from them have been the motivation for much of his life's work, including his Peace Corps service in Ghana and even his entry into the field of medicine.

Former co-chief resident, **Dr.**

Jerrold Van Dyke (1982-83) cites Dr. Balfe's ability to convey his knowledge with enthusiasm and humor as one quality which led to his selection as 1983 Teacher of the Year. "Dr. Balfe's interesting conferences and dedication to teaching, as well as his willingness to devote time to residents were major contributions to our resident education," says Dr. Van Dyke.

Radiology is a challenging profession for Dr. Balfe, who has always enjoyed science. In 1968, he graduated cum laude with a degree in physics from the University of Santa Clara. Using his knowledge, he taught physics and calculus to African students in Ghana for two years. At Mallinckrodt, he continues to appreciate the challenges of physics; radiology being "essentially applied physics." In addition to being a medical scientist, Dr. Balfe is an ardent bridge player, a puzzlist, a competitor, and a fan of Ellery Queen mysteries.

"When I was a kid, I played in chess tournaments and now, if I could, I think I would be a professional bridge player. I enjoy games of all kinds. I like competing. I like to solve problems." ■

Teamwork is the hallmark of teaching and learning at MIR. Within this framework, each year a few individuals are singled out for special honor or responsibility.

Three years after assuming responsibility for medical student training in the diagnostic division of MIR, **Dr. Dixie Aronberg**, associate professor of radiology, continues to be enthusiastic about teaching. With plans currently underway to supplement the radiology curriculum with mini-electives for freshmen, Dr. Aronberg seems to develop an endless reserve of teaching innovations.

Modestly, she gives much of the credit for curriculum developments to the students themselves. For example, recent expansion of the senior radio-

logy elective to include a series of four additional conferences on chest films resulted from numerous student requests emphasizing that need. "Feedback from others" has helped Dr. Aronberg advance Mallinckrodt's teaching program, already known and respected by medical students in universities across the United States.

Encouraging student involvement is the cornerstone of Dr. Aronberg's teaching in her chest radiology conferences. A typical conference begins with a visual display of eight chest films; "a potpourri of common problems that an intern might encounter." Then, the students, as a group, are given a set of cards, each with a different description of chest radiograph abnormalities, and are asked to match, in multiple choice style, cards with films. Students analyze the films as a group, discussing, debating, and sharing their knowledge. The procedure is then repeated with cards

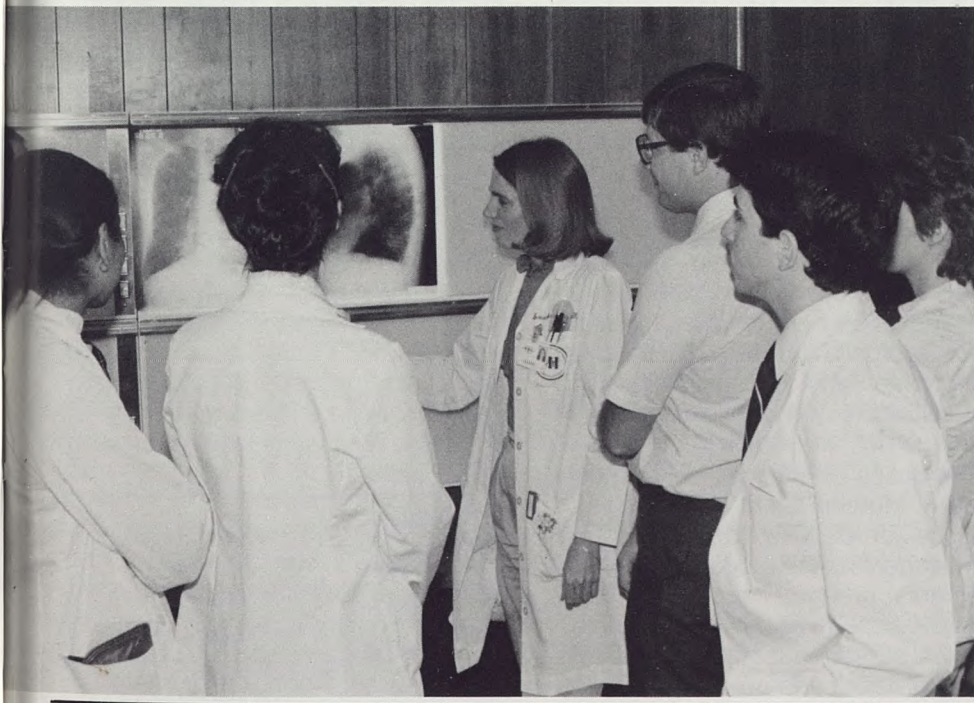
describing possible tests (everything from blood samples to magnetic resonance imaging) an intern might order to solve the problems presented on the films. Students again interact, looking for answers.

Each student must take a turn discussing a case for the group, presenting the cards selected for a film, providing explanatory information, and answering questions. Dr. Aronberg finds that "individually, few students feel confident to describe the films; by working together, the group usually reaches accurate conclusions—correctly identifying the conditions and ordering appropriate exams to refine the diagnoses." In this process, more is learned than one could teach by lecturing.

How to use radiology in a medical practice is the theme of Dr. Aronberg's teaching. Her goal is not "to make junior radiologists," but rather to teach methods of using radiology to solve clinical problems, cost effectively. The students will be entering internships and "need to know how to apply radiology techniques to diagnose medical conditions."

Engaging radiology residents in the teaching process is yet another of Dr. Aronberg's innovations. With her guidance, residents may voluntarily lead senior elective conferences and lectures, a rewarding experience for both the residents and medical students.

Dr. Aronberg's contributions to education have been well received. In 1983, senior medical students chose her as the "Teacher of the Year." The program which she oversees yearly receives a large number of applications from medical students of other major universities; one slot per each six-week elective being reserved on a first-come-first-served basis for an outside student. Mallinckrodt's program is considered one of the most comprehensive radiology programs for medical students in the nation. ■



Dixie Aronberg, M.D., encourages senior medical students to analyze and discuss films in the chest radiology conference.



Daniel Picus, M.D., chief resident

Chief resident, **Dr. Daniel Picus**, was born in Detroit and reared in Rockford, Illinois. The son of an internist, he first wanted to be a "regular doctor." After graduating Phi Beta Kappa with twin degrees in chemistry and biology from the University of Illinois, he entered medical school at the University of Chicago. Elected to AOA and continuing to achieve his career goals with a standard of excellence, Dr. Picus saw in radiology the

Profiles of the Chiefs

Diagnostic Radiology



William D. Middleton, M.D., co-chief resident

challenge he wanted: "the opportunity to do a little bit of everything, to solve problems that require a broad base of information."

"Mallinckrodt has offered that variety," says Dr. Picus. "You follow medical as well as surgical patients. You get a little pediatrics, obstetrics, and gynecology—an interaction with many physicians in other specialties."

Few hours for relaxation can be carved out of the busy schedule of a resident, especially a chief resident

to fifty diagnostic radiology residents. Now in his fourth year of training, Dr. Picus' schedule includes opportunities for teaching, as well as learning, as he confers daily with medical students and other clinicians on radiological problems. As chief resident, he hosts and interviews applicants to Mallinckrodt's radiology program, keeps residents up-to-date on the workings of the institute, arranges noon conferences, and prepares the resident

Radiation Oncology

Were it not for a realistic view of the job market and a desire "to do something closer to the human condition," **David Monyak, M.D.**, chief resident in radiation oncology, would be gazing at stars, rather than teaching and practicing radiology at MIR. Astronomy was Dr. Monyak's first choice of professions.

"I had always wanted to be an astronomer," he said, "and it wasn't an easy decision to abandon that career. However, when I was in school, the job market was poor. I was concerned about the types of positions that would be available to someone with a degree in astronomy." So, after two years of graduate study in astronomy at the University of Texas, he switched to the field of medicine.

Medicine was not a wholly unfamiliar field of study for Dr. Monyak. His father is a surgeon. Always interested in science, particularly specialized technology, Dr. Monyak received a bachelor's degree in physics from Rice University, Houston.

For the practice of radiation onco-

logy, Dr. Monyak has found his physics background "beneficial." Residents in radiation oncology must complete a rotation in radiation physics, with emphasis on dose measurements and treatment planning. Prescribing radiation in cancer therapy often involves application of the theories and principles of physics.

As a specialty, Dr. Monyak also enjoys radiation oncology "because of its emphasis on treatment." Residents within the MIR division receive training (side-by-side with a clinical oncologist) in GYN, ENT, GI, pediatrics, lymphoma, and GU oncology. The natural history and principles of cancer management are stressed.

His duties as chief resident require that Dr. Monyak assist residents in all phases of training—from orienting new students to the program to helping residents prepare meaningful case presentations. He also coordinates rotation schedules for the ten residents in the division, and acts as liaison between radiation oncology and chief residents on other services, an important role in view of the multidisciplinary

nature of cancer therapy.

Dr. Monyak sees a bright future in clinical radiation oncology. He currently spends most of his time in the clinical setting, but hopes to someday have greater opportunities in the area of research. The shift in radiology toward multiple daily treatments in fragmented dosages is of particular interest to him.

Having a successful career at MIR, Dr. Monyak limits his fascination with astronomy to reading, and organizing his collection of galaxy photography. He, his wife, Linda Carol, who has her master's degree in biology from the University of Texas, and their daughter, Rachel, make their home in Creve Coeur. ■

In 1982, a \$350 airline ticket with unlimited mileage took **Perry W. Grigsby, M.D.**, across the country to six nationally acclaimed radiation oncology departments. That ticket proved to be a wise investment for him and a stroke of good luck for Mallinckrodt. After successful interviews at all six institutions, Dr. Grigsby came

rotation and on-call schedules.

"Also, Dr. Middleton and I are responsible for moderating the film interpretation session at the A³CR² annual meeting in Nashville next spring. We will select twenty cases to be discussed by chief residents from across the country."

Dr. Picus is married to Lisha Gayle, a reporter for the St. Louis Post-Dispatch. He is a baseball fan and a racquetball player and just as he studies images on the screen as a major part of his daily work as a radiologist, in his leisure time, he enjoys watching some of the great movies of Hollywood, many of which he has seen several times. As to future plans, he has several options; academic radiology, private practice, or a fellowship and additional training.

An observation is that his decision will involve the pursuit of his special interest—abdominal imaging. ■

As the son and brother of educators, **Dr. William Middleton**, co-chief resident in diagnostic radiology, quickly adapted to the academic environment of Mallinckrodt. His father is an indus-

trial education professor and his mother teaches English, both in Muncie, Indiana. His older sister is a teacher in a nearby community.

Born in Illinois, but reared in Muncie, Dr. Middleton was considering medicine when he left high school. "I enjoyed biology and physics," he said, "so at Duke University I decided to go into biomedical engineering, a curriculum which allowed me to pursue my academic interests and also incorporate the pre-medical courses."

After graduating summa cum laude and Phi Beta Kappa, he was accepted into Duke's medical school.

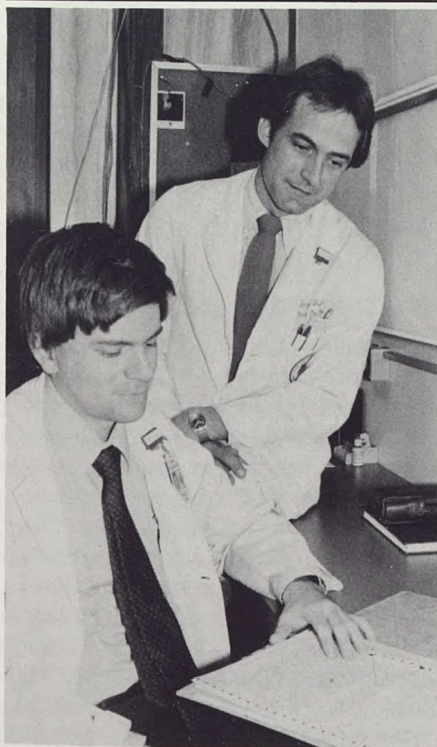
"Once I was in med school, my engineering background initially led me toward radiology. With more experience, I realized it was the clinical aspects of radiology that appealed to me most—being involved in the evaluation of a broad spectrum of patients, disease, and pathology. And radiology deals with what I consider the most exciting aspect of medicine, establishing a diagnosis."

Among Dr. Middleton's responsibilities as co-chief resident are organizing resident lectures for the

technology students, resident talks for other residents and staff, and CPR courses for the residents and fellows. He also works with Dr. Picus in planning social functions for the house staff and faculty such as the yearly picnic and the welcoming party for new residents. These jobs, in addition to the clinical responsibilities of a fourth year resident, leave little free time. But when he can find time, the one time all-state wrestler plays tennis and racquetball, lifts weights, runs, and follows the baseball Cardinals. He also finds great enjoyment in art. On the wall of his office are meticulously engineered abstracts he created with multiple layers of mat board. On his desk is a geometric sculpture designed from laminated wood and string.

When he leaves Mallinckrodt, Dr. Middleton hopes to stay in academic radiology, a decision influenced by many important role models. "If I can stimulate the same enthusiasm for learning and problem-solving in future residents and medical students that my parents and the staff here have engendered in me, then I'll feel very successful." ■

David J. Monyak, M.D., and Perry W. Grigsby, M.D., chief and co-chief residents, radiation oncology



to MIR, where he is now assistant chief resident in radiation oncology.

Choosing Mallinckrodt because of its tradition of outstanding clinical facilities and well-recognized teachers, Dr. Grigsby here applies his physics background to the study of radiation and its effects on biological systems. He also fulfills his need to work with people through interaction with Mallinckrodt's large and varied patient population.

"The thing I most enjoy in radiation oncology," says Dr. Grigsby, "is the therapeutic aspect and the one-on-one relationship with a patient. This relationship is especially important in radiation oncology because many patients do not understand cancer. They're afraid of the word. With a caring physician and appropriate explanations, our patients can maintain hope for the future."

Dr. Grigsby has accomplished much in the years since he left the family farm in Cadiz, Kentucky, to pursue education at the University of Kentucky. He completed a bachelor of science degree in zoology, a mas-

ter's degree in medical radiological physics, and a medical degree. It was also in Lexington, during medical school, that he first entered the department of radiation oncology at the university hospital, and realized that he had found his specialty. Establishing a standard of excellence, he was honored as outstanding senior student in radiation oncology.

Dr. Grigsby continues to be recognized for his efforts in his field. In May, he was named to fill a Regular Clinical Fellowship, awarded by the American Cancer Society. A member of several professional organizations, including the American College of Radiology, the American Society of Therapeutic Radiologists, and the Radiation Research Society, he has co-authored fourteen papers and made presentations at nine national scientific meetings.

Handling the roles of husband and father of three children rounds out the life of Dr. Grigsby. He is an active member of Kirkwood Presbyterian Church, and among his list of interests are practical hobbies such as woodworking and refinishing furniture. ■

A New Beginning

1984 New Residents

Diagnostic Radiology

1st Postgraduate Year

Dr. Lynn Barrett from Detroit, Michigan was a zoology major and summa cum laude, Phi Beta Kappa graduate of Duke University. During medical school at Duke, she was a member of AOA and carried out research projects in neuroradiology. Her husband, Dr. Herbert J. Glatt, a medical intern, will begin his residency in ophthalmology next year at Barnes Hospital. Dr. Barrett plays the piano, soccer, ultimate frisby, and volleyball and also enjoys skiing and windsurfing. She recently made a spectacular catch of a well-hit softball by Dr. Ronald Evens, director of MIR, during the staff and residents family picnic.

Dr. Scott J.J. Evans received his bachelor's degree in chemistry and medical degree from the University of Utah in his native Salt Lake City, Utah. While attending medical school, he became a member of AOA and received the Dean's Research Award for projects involving hepatic imaging and flow study research. In his free time, he enjoys skiing and backpacking.

Dr. Kevin C. Funk was born in Mt. Pleasant, Utah and educated in Utah. He obtained a bachelor's degree in biology from Utah State University, then completed his medical degree at the University of Utah. During medical school, he was named president of AOA and recipient of the Paul Wintrobe Memorial Award as outstanding senior medical student. At home with his wife, Maree, an elementary school teacher "retired," and his sons, Ryan and Taylor, ages five and one, his favorite pastime is woodworking.

Dr. Landis K. Griffeth of Greenville, South Carolina attended Massachusetts Institute of Technology and received a bachelor's degree in chemistry and zoology from Duke University, graduating summa cum laude. At Duke University Medical School, he obtained a medical degree and a doctorate in pharmacology and was elected to AOA and Phi Lambda Upsilon. Dr. Griffeth's wife, Terri, is presently enrolled in the St. Louis University graduate program in health administration. They both enjoy outdoor sports and activities.

Dr. Scott N. Nadel comes from New York City and was a biomedical engineering major and Phi Beta Kappa graduate of Hampshire College in Amherst, Massachusetts. He received his medical degree from Johns Hopkins University where his research projects related to transplant immunology, venous sclerosants, varicocele anatomy, and blood flow measurements techniques. Dr. Nadel's hobbies are carpentry and filmmaking. His wife, Kate, is working toward a master's degree in social work at Washington University.

Dr. David H. Schmidt was born in Panama City, Florida and graduated Phi Beta Kappa with a degree in biology from the College of William and Mary, Williamsburg, Virginia. He attended the Medical College of Virginia in Richmond where he was elected to AOA and received the Dean's Award, Pathology Award, and Book Awards. He graduated first in his medical school class. Dr. Schmidt's special interests are golf, bridge, fishing, and team sports.

Dr. Thomas E. St. Amour is a native of Illinois. Born in Chicago, he received his bachelor's, master's, and

doctorate degrees in mathematics from the University of Illinois at Chicago. He received his medical degree with honors from the University of Chicago. During medical school, he was elected to AOA and received awards in radiology and for outstanding potential in clinical research and teaching. Dr. St. Amour and his wife, Catherine, who is an obstetrical nurse, have three children. In off-hours and on weekends, Dr. St. Amour fills the important role of being father to six-year-old Sarah, Ed, age three, and Claire, two months.

2nd Postgraduate Year

Dr. Richard A. Bedont comes from Salt Lake City, Utah. A chemistry major at the University of Denver in Colorado, he attended medical school at the University of Utah where he was elected to AOA and graduated with honors in internal medicine. He served an internship in internal medicine/cardiology at the University of Utah Affiliated Hospital followed by another internship in nuclear medicine. Dr. Bedont's hobbies are snow-skiing, tennis, and music.

Dr. Joel Sandor Sigeti was born in Seattle, Washington. He received a bachelor's degree in cell and molecular biology from the University of Washington where he was elected to Phi Beta Kappa and graduated magna cum laude. During medical school at the University of California, San Diego, he was the chief author of a research paper on "Mechanism of Action of Metronitazole in *Bacteroides fragilis*" which was published in the Journal of Infectious Disease, December 1983. He served a transitional internship (rotating) at Mercy Hospital and Med-



New members of the MIR House Staff with Dr. Ronald G. Evens, radiologist-in-chief and director of MIR. First row, left, Drs. Kevin Funk, Richard Bedont, Lynn Barrett, Thomas St. Amour, and David Schmidt. Second row, left, Drs. Scott Nadel, Scott Evans, Andrew Wu, Stanley Grossman, Patrick Vogel, Arthur Mulick, Joel Sigeti, Landis Griffeth.

ical Center in San Diego. For recreation, Dr. Sigeti enjoys basketball, baseball, and reading.

Dr. Patrick M. Vogel, a native of New York, was born in Manhasset and received both his bachelor's degree in zoology and medical degree from Duke University. A member of AOA, he interned in medicine at the University of California at San Francisco. Dr. Vogel and his wife, Susan, who is a pharmacist, particularly enjoy outdoor sports.

Dr. Andrew C. Wu was born in Windsor, Ontario, Canada and received his undergraduate degree in natural science from Johns Hopkins University. Completing his medical degree at Washington University, Dr. Wu was elected to Phi Beta Kappa and was the recipient of the Edmund V. Cowdry Prize in Histology. He served a residency in medicine at St. Luke's Hospital in St. Louis. Married to Dr. Sandra S. Wu, a first-year anesthesiology res-

ident at Barnes, Dr. Wu shares a like career with his wife and his enjoyment of tennis.

Radiation Oncology

1st Postgraduate Year

Dr. Don C. Arwood received his master's and bachelor's degrees in nuclear engineering from the University of Tennessee in his native Knoxville, Tennessee. He comes to MIR from East Tennessee State University in Johnson City where he received his medical degree. For recreation, Dr. Arwood enjoys jogging and water and snow skiing. His wife, Jana, is a psychiatry intern at Barnes Hospital.

Dr. James R. Geurin was born in Hot Springs, Arkansas and received the bachelor of science degree in secondary education and the master of science degree in physics from Memphis State University. He com-

pleted his medical degree at the University of Tennessee Medical Center for the Health Sciences, also in Memphis. Dr. Geurin's slate of leisure activities range from computer applications to hang-gilding.

2nd Postgraduate Year

Dr. Earlene H. Walls, a California native reared in Albuquerque, New Mexico, received her bachelor of science degree in medical technology and her medical degree from the University of New Mexico at Albuquerque. She also completed a rotating internship at the University of New Mexico Hospital before coming to MIR in 1983 as a first year resident in radiation oncology. Although their like careers allow few leisure activities, Dr. Walls and her husband, Tim McMurry (fourth year medical student at St. Louis University) mutually enjoy camping, hiking, backpacking, bicycling, and boating.

Focus on Fellows



Pictured with Dr. Ronald G. Evens, director of MIR, are Drs. Andrew van der Vliet, Richard Koch, Greg Jamroz.

Abdominal Fellows

Dr. Richard A. Koch, instructor and fellow in abdominal radiology, is a native St. Louisian. He received a bachelor's degree in general biology from Vanderbilt University and a medical degree from St. Louis University. A member of Alpha Omega Alpha, Dr. Koch comes to MIR from the University of Texas at Houston where he served a residency in radiology. In off-hours, Dr. Koch enjoys photography, astronomy, and jogging.

Dr. Andrew van der Vliet, instructor and fellow in abdominal radiology, was born in Melbourne, Australia, and has a delightful Aussie accent. His medical education includes three years of pre-clinical training at Monash University in Melbourne followed by two years of pre-clinical training at Alfred Hospital and Medical School in Melbourne. He received the Robert Power Medal in Surgery and the Harriet Power Medal in Medicine during his final year. While at Alfred Hospital, Dr. van der Vliet completed a one-year rotating internship, then served resi-

dencies in surgery and radiology. His wife, Jane, is a registered nurse and they both enjoy sailing, tennis, and skiing.

Musculoskeletal Fellow

Dr. Steven J. Adler (co-chief resident, 1983-84), after completing four years of diagnostic radiology training, has been appointed instructor and fellow in musculoskeletal radiology.

Neuroradiology Fellows

Dr. Carl A. Geyer, who was born in Champaign, Illinois, returns to the Midwest as an instructor and fellow in neuroradiology at MIR. His educational history includes a bachelor's degree in biology from Johns Hopkins University and a medical degree from Brown University. Between college and medical college, he studied immunology at Johns Hopkins University, working on T-cell receptor sites. Most recently, he completed an internship

and a three-year residency in radiology at the Walter Reed Army Medical Center. Fly-fishing is an interest he shares with his wife, Patricia, who holds a doctorate in French Literature from Brown University. His hobbies also include raising orchids and oil painting. His artwork has been exhibited at the Newport Art Association in Newport, Rhode Island (1969), Johns Hopkins University (1973), and Rhode Island Hospital (1976).

Dr. Gary A. Press has been appointed an instructor and a fellow in neuroradiology following the completion of three years of diagnostic radiology training at Mallinckrodt.

Dr. Michael P. Ward, after completing a three-year residency in diagnostic radiology at Mallinckrodt, has been appointed an instructor and fellow in neuroradiology.

Pediatric Fellow

Dr. Greg A. Jamroz has been appointed an instructor and fellow in pediatric radiology. A St. Louis native,

he received the bachelor of arts degree in chemistry and the doctor of medicine degree from St. Louis University. He interned in pediatrics at the University of California, Irvine and served a three-year residency in radiology at St. Louis University Hospitals. Dr. Jamroz and his wife, Michele, have two children, four-year-old Benjamin and Camille, 6 months. He enjoys outdoor recreation, particularly hiking and bicycling.

Nuclear Medicine

Dr. Stanley J. Grossman comes to MIR as a fourth year resident in nuclear medicine after completing an internal medicine residency at Riverside Methodist Hospital in Columbus, Ohio. Born in St. Paul, Minnesota, he received a bachelor's degree in zoology from Miami University, Oxford, Ohio, and returned to his native state for a medical degree at Mayo Medical School.

Dr. Arthur L. Mulick, a native of Pittsburgh, Pennsylvania, completed a three year residency in radiology at Emory University and comes to MIR for a fourth year of training in nuclear medicine. A graduate of the University of Florida with a bachelor's degree in interdisciplinary bio/medical sciences, he was accepted to the university's medical school through the junior honors medical program. He served an internship at Baptist Memorial Hospital of Memphis, Tennessee. Dr. Mulick's hobbies are volleyball, racquetball, tennis, soccer, and barber-shop quartet singing.

Dr. Mark A. Mintun, from Lake Forest, Illinois, begins his first year of residency training in nuclear medicine. After graduating from Massachusetts Institute of Technology with a degree in chemical engineering with emphasis in computer science and mathematical modeling and biological systems,

he attended the University of Kansas Medical School and received his medical degree from Washington University. The recipient of the 1981 Hugh M. Wilson Award for Research in Radiology, Dr. Mintun served an internship in internal medicine at Jewish Hospital followed by a two-year fellowship in neurology at Washington University under the preceptorship of Dr. Marcus Raichle. Dr. Mintun has been a major contributor for over two years to PET research, modeling, reconstruction, and neurophysiology. Co-author of ten publications, his current projects include the investigation of new techniques to reconstruct images and the development of techniques to measure: glucose metabolism in the brain with PET and "c-glucose;" neuro-receptors in the brain; and perfusion and ventilation of the lung with PET. Dr. Mintun's wife, Susan Lorraine, is a graphic designer, calligrapher, and gourmet cook and also shares her husband's enjoyment of volleyball.

Complete Summer Oncology Fellowship

The MIR division of radiation oncology continues to be a leader in the development of opportunities which provide medical students with "hands-on" experience in therapeutic radiology as well as instruction in basic radiation physics, radiation safety, and scientific research.

In keeping with this tradition, the division successfully concluded the 1984 summer session coordinated by **Joseph R. Simpson, M.D.**, for the purpose of exposing first-year medical students from Washington University and other institutions to the clinical and basic science aspects of oncology.

The six medical students participating in the program either worked primarily in clinical radiation therapy or carried out laboratory research in cancer biology. ■



Pictured with Dr. Simpson are front row, left, Lee Ann Pixley, Yasmira Watson, and Tony Parks. Back row, left, Bob Forstot, Gary White, and Laura Rokusek.

The Director's Office Reports

Recent Promotions

Hsiu-san Lin, M.D., to Professor of Radiology (Radiation Oncology)

Dixie J. Aronberg, M.D., to Associate Professor of Radiology

Gilbert H. Nussbaum, Ph.D., to Associate Professor of Radiation Physics in Radiology

Philip J. Weyman, M.D., to Associate Professor of Radiology

Armand Diaz, R.T., R.N., to Assistant Professor (Technical Administration)

James J. Spadaro, Jr., M.D., to Assistant Professor of Radiology (Cardiology)

Gary Omell, M.D., to Assistant Professor of Clinical Radiology

Robert F. Scheible, M.D., to Assistant Professor of Clinical Radiology

New Staff

John K. Gohagan, Ph.D., Associate Professor of Radiology (also Department of Preventive Medicine and Public Health)

Delia M. Garcia, M.D., Assistant Professor of Radiology (Radiation Oncology)

Sheri D. Henderson, Ph.D., Assistant Professor of Radiation Physics in Radiology (Radiation Oncology)

Robert J. Myerson, M.D., Assistant Professor of Radiology (Radiation Oncology)

William R. Reinus, M.D., Assistant Professor of Radiology

Robert R. Kuske, M.D., Instructor in Radiology (Radiation Oncology)

David McNaney, M.D., Instructor in Radiology (Radiation Oncology)

Edward F. Ragsdale, M.D., Instructor in Clinical Radiology

David G. Ballinger, Research Assistant (Radiation Sciences)

Change of Status

Russell Gerber, B.S., to Instructor in Radiation Physics in Radiology (Radiation Oncology)

Off Staff

George J. Balogh, M.D., completed a four-year diagnostic radiology residency and has joined Kalamazoo Radiology P.C., a private group practice in Kalamazoo, Michigan.

John M. Bedwinek, M.D., associate professor of radiology in radiation oncology, has accepted the position of director of the department of radiation oncology, East Tennessee Baptist Hospital in Knoxville, Tennessee, effective Jan. 6, 1984.

John W. Clouse, M.D., after completing a four-year residency in radiation oncology, has entered private practice in radiation oncology at Fargo Clinic in Fargo, North Dakota.

Gregory W. Cotter, M.D., completed a three-year residency in radiation oncology and is now affiliated with Baptist Medical Center at Columbia, South Carolina, in the private practice of radiation oncology.

David J. DiSantis, M.D., completed three years of diagnostic training in radiology and a one-year fellowship in abdominal radiology and has entered a combined private/academic practice in Norfolk, Virginia, as assistant professor of radiology at Eastern Virginia Medical School and staff radiologist at De Paul Hospital.

Karen F. Goodhope, M.D., completed one year of training in nuclear medicine and has joined Northwest Radiologists, a hospital-based private practice at Christian Hospital, Northeast in St. Louis.

Gilbert A. Hurwitz, M.D., has accepted an academic position in the department of nuclear medicine at Victoria Hospital (affiliated with University of Western Ontario) in London, Ontario, Canada. Dr. Hurwitz completed two years of training in nuclear medicine.

Michael J. Jossa, research assistant in radiation sciences, has returned to his home in Belgium as a programmer in the Unite Medicale Cyclotron at the University de Liege.

Robert W. Laakman, M.D., (chief resident, 1983-84) has begun a fellowship in magnetic resonance imaging at Case Western Reserve University Affiliated Hospitals in Cleveland, Ohio, after completing four years of training in diagnostic radiology.

Katherine Reed, M.D., completed a four-year diagnostic residency and one year of nuclear medicine training and has joined Sheer & Associates, a private practice radiology group at Northside Medical Center in Tampa, Florida.

Steven H. Stokes, M.D., has entered a private practice affiliated with the department of radiation therapy at Jackson Hospital in Montgomery, Alabama, after completing three years of residency training in radiation oncology.

Gary E. Van Zant, Ph.D., assistant professor of cancer biology in radiology has accepted the position of associate professor in the department of anatomy at Texas Tech University Health Sciences Center in Lubbock. **Ronald E. Worthington, Ph.D.**, research associate in cancer biology has also joined the staff of Texas Tech as a research associate.

James B. Weinstein, M.D., after three years of diagnostic residency training and a one-year fellowship in abdominal radiology, has joined a private practice diagnostic radiology group affiliated with Northside Hospital, a community hospital in Atlanta, Georgia. ■

Outstanding Teacher



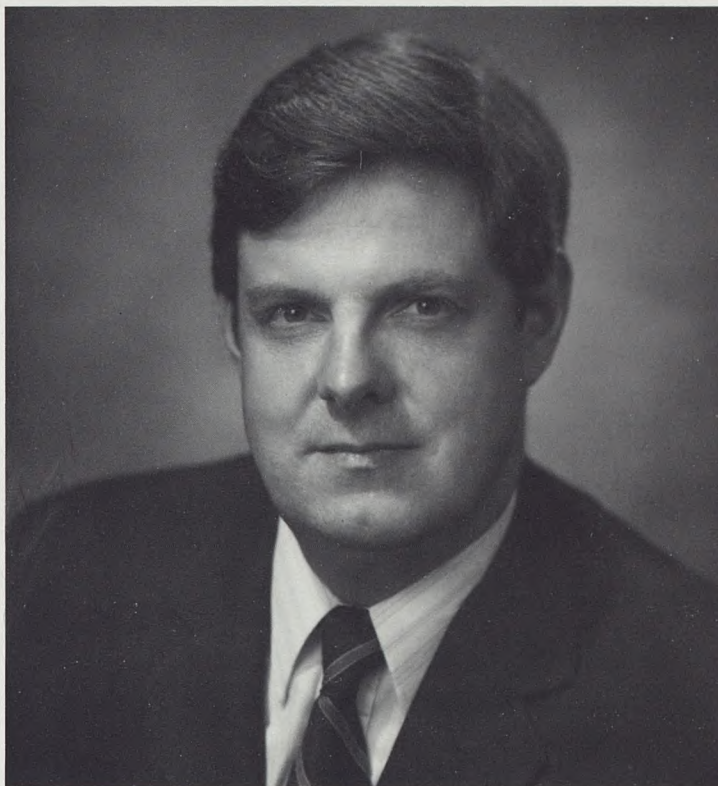
Alumni News

Lest we forget that the outstanding work performed at MIR is carried far beyond the institute's doors, word has reached us that **Dr. Tom W. Staple**, former chief of musculoskeletal radiology and musculoskeletal and peripheral angiography, received the Outstanding Teacher Award for the 1983/84 Academic Year from the department of radiological sciences at the University of California, Irvine. Dr. Staple shares the distinction with Mallinckrodt, saying, "the honor is in no small measure due to some of the fine experiences during my tenure at Mallinckrodt."

A member of the MIR staff for sixteen years, Dr. Staple is responsible for originating and developing the institute's musculoskeletal section. Though trained as a general radiologist, his interests in procedure-oriented diagnostic testing led to advances in large joint arthrography, bone biopsy techniques, and prosthetic hip joint aspiration.

Dr. Staple's background in cardiovascular contrast studies made peripheral angiography and venography early responsibilities of the musculoskeletal section. This led directly to development of studies for renal dialysis shunts and fistulae and to early attempts at percutaneous transluminal angioplasty. His collaboration with orthopedic surgeons stimulated the offering of large joint (i.e. knee, shoulder, hip and ankle) arthrography at Washington University Medical Center. Similarly collaboration with various specialists led to the development and clinical acceptance of percutaneous musculoskeletal biopsy performed by radiologists. ■

The Society of Nuclear Medicine Michael J. Welch, Ph.D. Elected President



Michael J. Welch, Ph.D.

Professor of Radiology and Chemistry President of the Society of Nuclear Medicine

Michael J. Welch, Ph.D., professor of radiation chemistry in radiology at Mallinckrodt Institute of Radiology and Washington University, has been elected president of The Society of Nuclear Medicine, a multidisciplinary organization with an international membership of 10,000 physicians, scientists, and technologists, concerned with the use of radioactive substances in the diagnosis and treatment of disease. He was installed as the new president at the 31st Annual Meeting of the Society on June 5, in Los Angeles.

An internationally recognized scientist and teacher, Dr. Welch was the first hot-atom chemist to use a hospital-based cyclotron in the production of short-lived radiopharmaceuticals capable of measuring regional cerebral blood flow, metabolism, and receptor concentrations. His achievements in clinical nuclear medicine include the development of numerous compounds, including iodinated fib-

rinogen and labeled platelets, which are used to visualize blood clots in veins and arteries. He has published over 160 articles on his research.

In 1980, Dr. Welch was awarded the Paul C. Aebersold Award, the highest recognition for science bestowed by The Society of Nuclear Medicine. This past summer, he was the recipient of a six-week fellowship from the Japanese Society for the Promotion of Science and spent time at universities in Fukuoka, Kyoto, and Sendai.

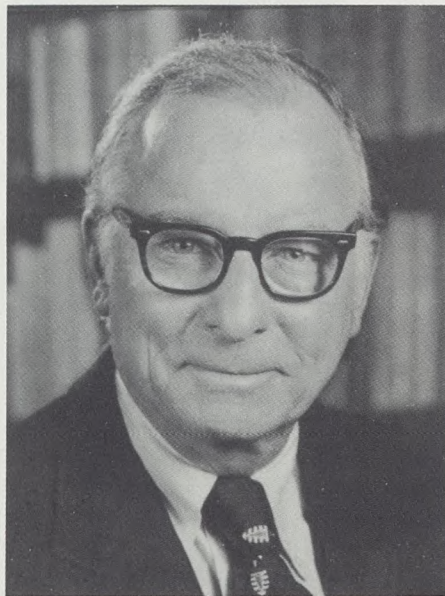
Born in Stoke-on-Trent, England, in 1939, Dr. Welch attended Cambridge University on scholarship and received his master's degree in 1964. He received a doctorate from the University of London in 1965, and in that same year, came to the United States and the Brookhaven National Laboratory for a two-year study of carbon atom chemistry. He joined the faculty of Mallinckrodt Institute in 1967. ■

The 13th Annual Scott Lecture

Melvin M. Figley, M.D., nationally recognized radiologist and editor of the American Journal of Roentgenology, delivered the 13th Annual Wendell G. Scott Lecture on Monday, September 10, in Scarpellino Auditorium at Mallinckrodt Institute. In his lecture entitled "Publication in Radiology 1984: Challenge to Traditions," Dr. Figley gave an historical overview of the development of radiology publications, and discussed the future of scientific journals in medical communication. Beginning in the 1950s, when only six major journals of radiology were distributed in the United States, Dr. Figley noted the rapid proliferation of journals in this field, including the large number of publications that deal with subspecialties. He described the effects of commercialism on medical publications, stating that traditional, research-oriented journals, such as the American Journal of Roentgenology, have been challenged to become even more scientific, more interesting, and more international in scope. As a result, these journals have instituted stringent in-house editing processes which often require weeks for approval of a single manuscript.

Since 1976, Dr. Figley has served as editor of the American Journal of Roentgenology, a major journal of radiology for nearly eighty years. During his tenure, the journal has grown in stature and readership. Formerly chairman of the department of radiology and radiologist-in-chief at the University of Washington in Seattle for twenty years, Dr. Figley retired from these positions in 1978, but continues to serve the university as professor of medicine and radiology.

A man of many honors, including membership in Alpha Omega Alpha, a Markle Scholarship, and a Gold Medal from the Association of University Radiologists, he is an honorary fellow of the Royal Australian College of Radiology, the Royal College of



Melvin M. Figley, M.D.
13th annual Wendell Scott Lecturer

London, and the Royal College of Radiologists. He has delivered named lectureships at six societies and universities and served as president of the Association of University Radiologists, the North American Society for Cardiac Radiology, and the American Roentgen Ray Society.

A Phi Beta Kappa graduate of Dartmouth College, Dr. Figley received the doctor of medicine degree, magna cum laude, from the Harvard Medical School. He interned in medicine at the University of Cleveland, and served a residency in radiology at the University of Michigan, where he continued on the faculty for nine years. He is the author or co-author of four book chapters and more than 46 articles on his research in the rapidly developing field of cardiovascular radiology.

The Wendell G. Scott Lecture was established by friends and colleagues of the late Dr. Scott as a living memorial to his excellence and leadership at Washington University, and in radiology and medicine. ■



MRI

New Technique for Early Diagnosis of Multiple Sclerosis

In yet another medical breakthrough, technological advances in radiology now enable clinicians to make early and accurate diagnosis of multiple sclerosis (MS), one of the most perplexing of all human diseases. Magnetic resonance imaging (MRI), the latest development in radiology, provides information invaluable to the detection of MS. Since no other test can independently confirm the existence of MS, MRI is rapidly becoming the preferred method of diagnosis.

Neither the cause nor sudden onset of MS, a neurological disease affecting more than 200,000 Americans, is understood. Some researchers theorize that the disease is triggered by slow-acting viruses which may inhabit the body, unobtrusively, for months or years. MS may even be a delayed reaction to a common virus. Others believe that it is an autoimmune disease, one in which the victim's own antibodies attack the central nervous system, causing damage.

Few clues on the cause of MS are provided by the demography of its victims. Although MS is more prevalent among women, individuals between the ages of 15 and 50, inhabitants of cold, northern climates, and persons related to another MS victim, the disease is not hereditary and its onset cannot be predicted.

Even the symptoms of MS may vary—from person-to-person and from time-to-time in an individual. Depending upon the area of the nervous system affected, symptoms might include: weakness, tingling, numbness, lack of coordination, slurred speech, partial or complete paralysis of extremities, or impaired bladder control. A "come-and-go" pattern involving alternation of exacerbations (attacks or symptoms) and partial or complete remissions also characterizes this disease.

It is understood that MS is a neurological disease which attacks the myelin sheath, a fatty coating or insul-

ation around the message-carrying nerve fibres in the brain and spinal cord. Where myelin has been destroyed, it is replaced by plaques of hardened tissues (sclerosis) in multiple places anywhere within the central nervous system. Distorting or even blocking nerve impulses, the plaques often disrupt normal activities of the optic nerve, the brain, cerebellar white matter, and the spinal cord, thereby impairing important body functions which are controlled by these tissues.

Detecting MS, a task made difficult because its symptoms often resemble those of other conditions, including a brain tumor, stroke, vitamin deficiency, hereditary degenerative disease and congenital anomalies of the central nervous system, has not been easy. Radiology greatly improved diagnoses with the advent of computed tomography (CT).

Demonstrating changes in the density of the brain parenchyma, CT displays the plaques in the white matter as areas of decreased density of brain tissue, most clearly visible in the periventricular areas. In many cases, diagnosis with CT is aided by the use of intravenous contrast injection, which enhances the lesions. Even with enhanced visualization, serious limitations in the detection of lesions in the brainstem and spinal cord are caused by bones and other body tissues.

No such limitations exist when MRI is used to diagnose multiple sclerosis. According to **Dr. Mokhtar Gado**, professor of neuroradiology at Mallinckrodt Institute of Radiology, the plaques indicative of the disease are clearly recognizable with MRI techniques. MRI highlights the biochemical differences in tissues, essentially mapping the actions and properties of water (which composes up to 90% of all tissue), or hydrogen protons in the body.

Regular x-rays often cannot distinguish the plaques because the water content of normal brain tissue differs

by only 14% from that of MS plaques. The time it takes for the plaques to relax after radio pulse, measured by the MRI procedure, differs from that for normal brain tissue by more than 100%. As a result, MRI can clearly distinguish the plaques.

The lesions appear in the white matter of periventricular areas (Figure 1), the subcortical areas (Figure 2), or in the cerebellum (Figure 3). In all locations, the lesions appear as areas of increased signal (bright patches) on spin echo (SE) images; the brightness is more intense in the so-called T2 weighted images. Furthermore, the ability to obtain images in various projections without the need to move the patient or machine parts enable MRI to display parts of the brain that are impossible to show by CT, for example, the sagittal section of the brainstem and its junction with the cord (Figure 4).

"The correct diagnosis of multiple sclerosis," says Dr. Gado, "depends on obtaining a careful history and thorough examination by an expert neurologist, laboratory testing, and radiologic imaging techniques of the brain parenchyma, particularly MRI."

In the meantime, MS research goes on at Washington University School of Medicine. Dr. Gado is presently collaborating with Dr. John D. Davidson and other St. Louis physicians in a study involving hyperbaric oxygen as treatment for the disease, which has heretofore eluded a cure. Hyperbaric oxygen is most commonly used to treat cancer patients who have radiation injury, and victims of carbon monoxide poisoning. Preliminary data suggests that it also improves plaques and symptoms of MS patients. In this first research project combining hyperbaric oxygen and magnetic resonance imaging, Dr. Gado will conduct MRI scans at the beginning, middle, and end of the study to measure the effectiveness of hyperbaric oxygen in treating MS. ■

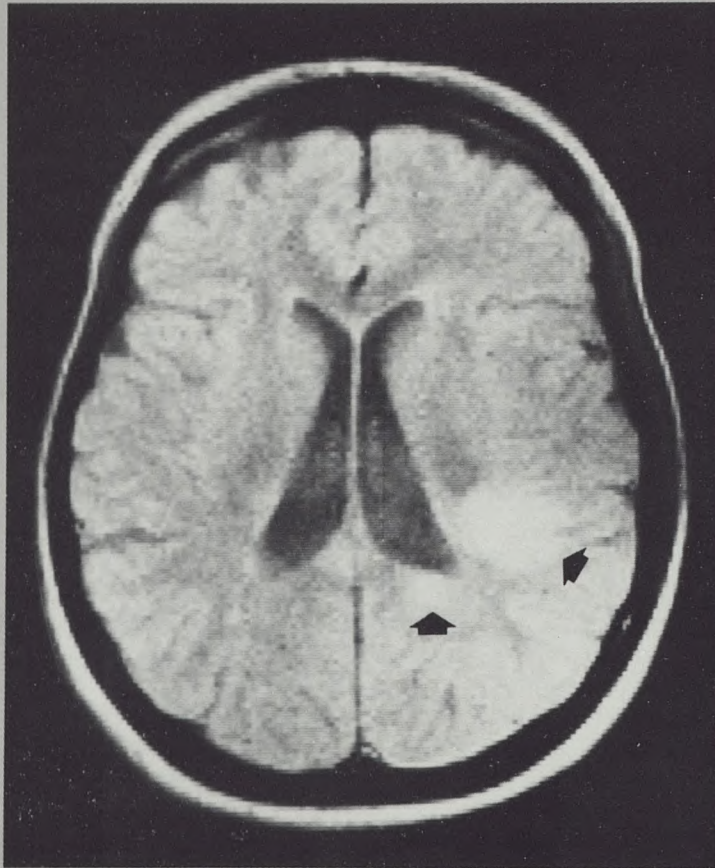


FIGURE 1A



FIGURE 1B

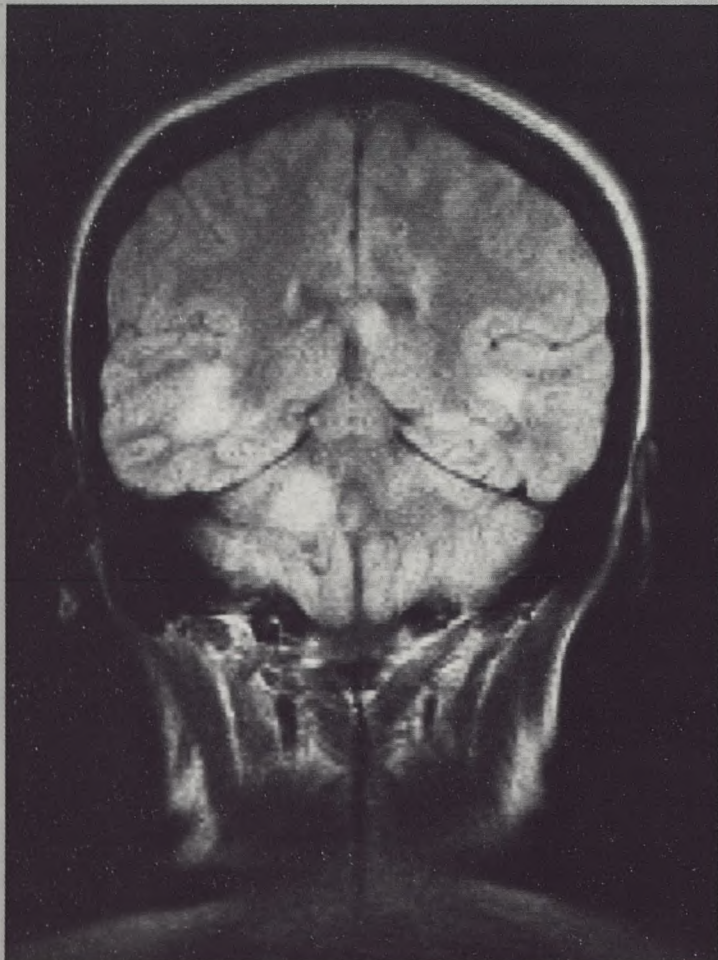


FIGURE 3A

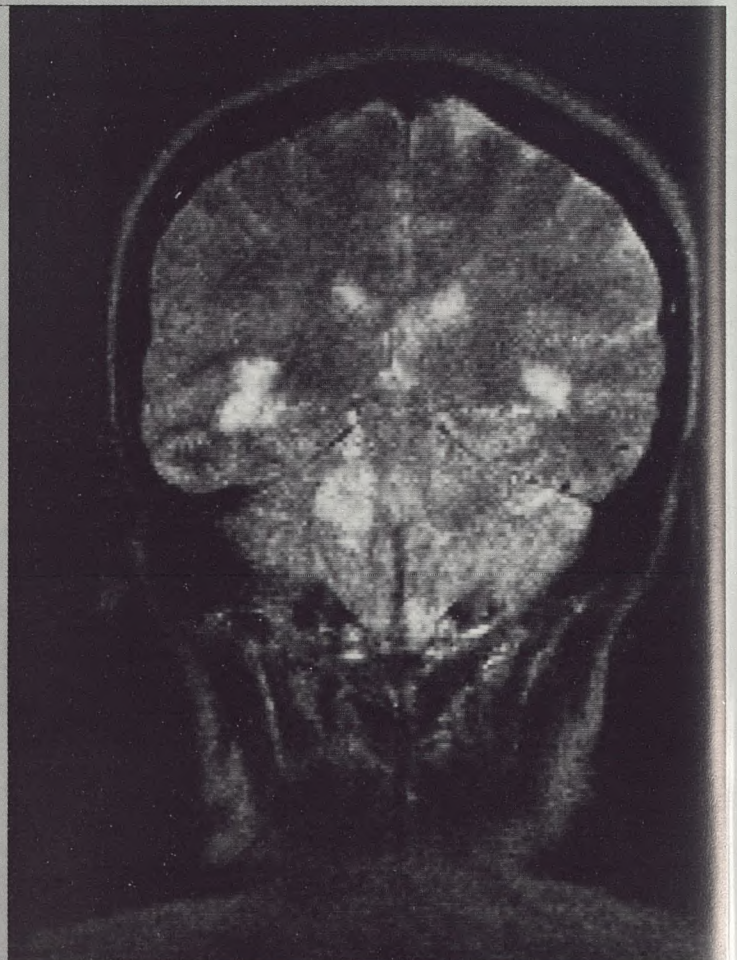


FIGURE 3B

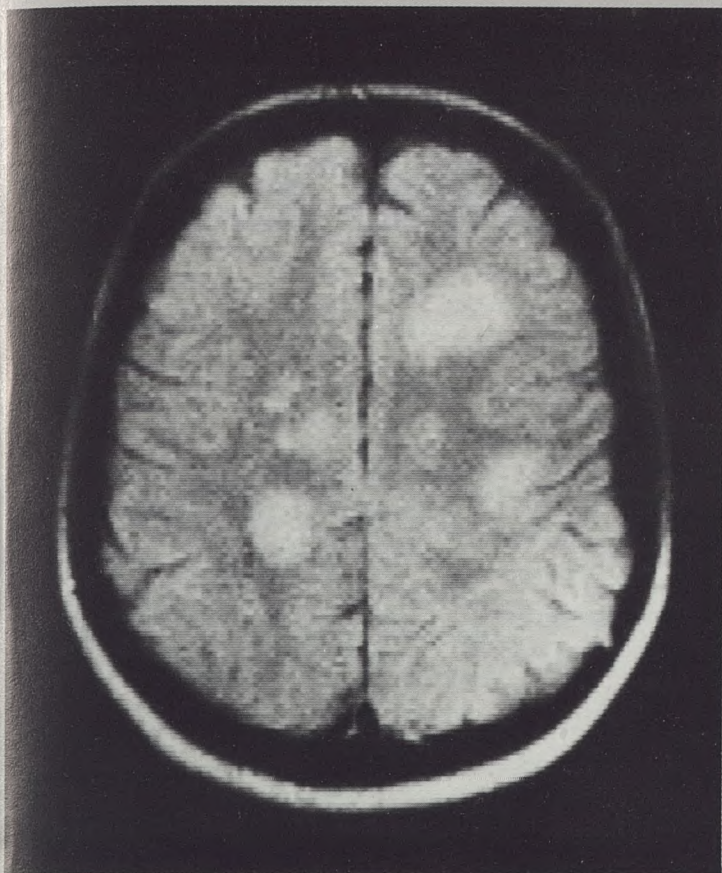


FIGURE 2A

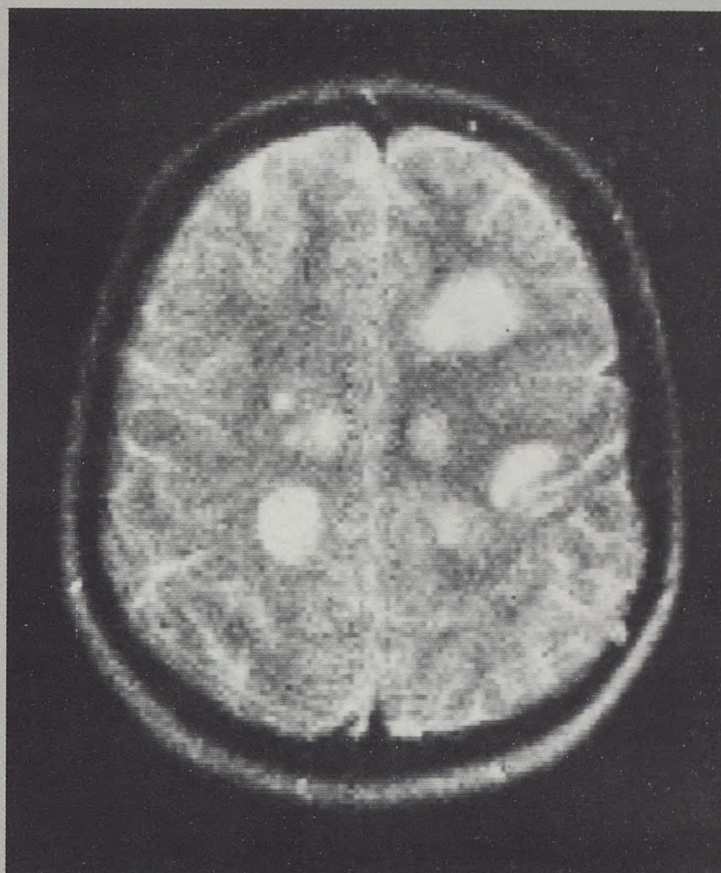


FIGURE 2B

MRI

Detection of Multiple Sclerosis

Figure 1

Patient with multiple sclerosis. The lesions are distributed in the vicinity of the lateral ventricles. Two lesions appear as areas of increased signal intensity (brightness) in the brain tissue close to the wall of the right lateral ventricle (arrows).

- A. Spin echo (SE) image.
- B. SE image with heavy T2 weighting shows increased contrast between the lesions and the normal brain parenchyma around.

Figure 2

Same case as Figure 1. The lesions are present in the subcortical white matter away from the ventricles.

- A. Spin echo (SE) image shows the lesion as bright patches compared to the surrounding normal brain.
- B. SE image with heavy T2 weighting showing increased contrast between the lesions and the surrounding brain tissue, compared with A.

Figure 3

Case of multiple sclerosis. Magnetic resonance images obtained in the coronal (frontal) projection. The lesions appear in the subcortical white matter of the cerebral hemispheres as well as in the white matter of the cerebellum. Notice the absence of artifacts from the bones of the base of the skull. This together with the capability to obtain coronal images are unique features responsible for the high superiority of this technique to other imaging modalities.

- A. Spin echo (SE) image.
- B. SE image with heavy T2 weighting.

Figure 4

Case of multiple sclerosis. Another unique feature of magnetic resonance is the ability to obtain sagittal images. This together with the absence of artifacts from the bones of the skull allow the demonstration of lesions at locations which are not possible to image by other radiologic techniques. The lesion in this case lies at the junction between the brain stem and the cord (arrow). ■

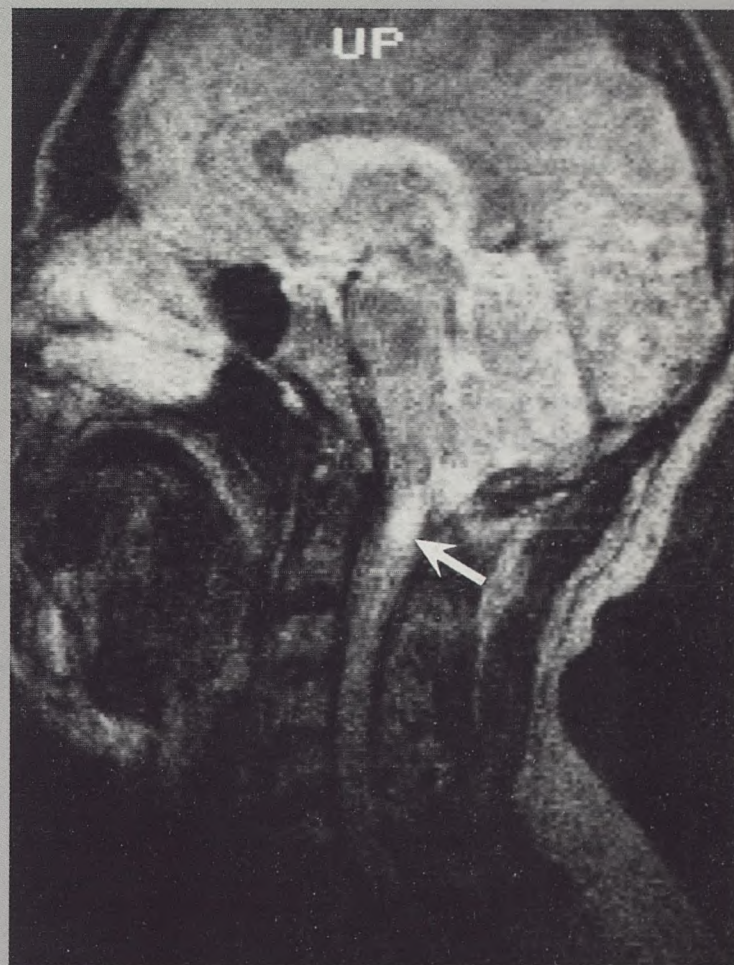
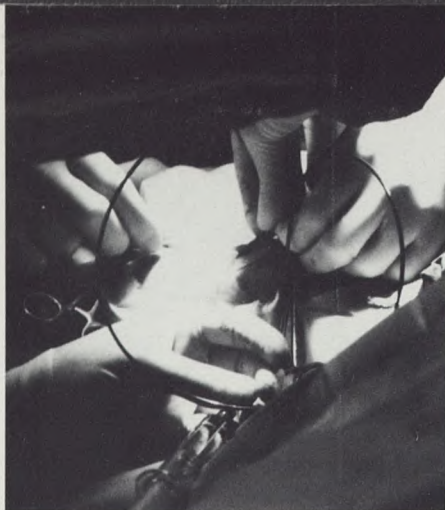


FIGURE 4



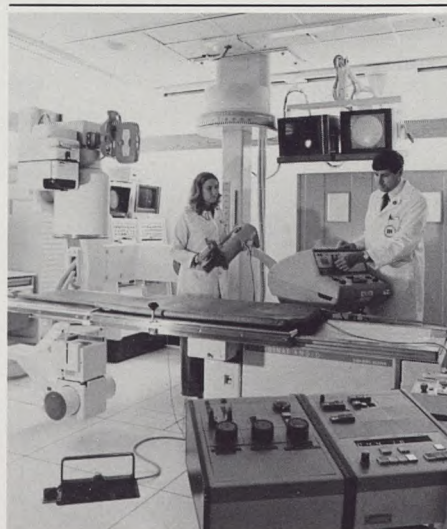
Mallinckrodt Institute of Radiology Cardiac Cath

Insertion of catheter into the brachial artery of the arm.

Cardiac catheterization, universally recognized as the most useful procedure for evaluating the anatomy and function of the heart, has progressed immeasurably since 1929, when Werner Forssmann first performed the procedure upon himself by inserting a urethral catheter into his own heart (through a vein in his arm). Providing cardiologists with ever increasing knowledge about the severity and exact location of heart defects, catheterization enabled the modern phenomenon of open-heart surgery. More recently, the diagnostic attributes of cardiac catheterization have been complemented by the introduction and widespread use of therapeutic catheterization procedures—specifically coronary thrombolysis and balloon dilation (angioplasty) of obstructed coronary arteries and even of narrowed heart valves. Following is an account of MIR's active involvement in this rapidly evolving diagnostic and therapeutic modality.

Four multimillion dollar cardiac catheterization suites, one within Children's Hospital, are located at Mallinckrodt Institute. Each facility features a revolving C-arm radiographic system which rotates on multiple axes around the patient, allowing visualization of the heart from different angles without movement of the patient—a far cry from the facilities of just five to ten years ago, when patients were propped on cushions, or strapped and rotated in a cradle. The now indispensable axial views were inconceivable. Biplane radiographic imaging is available in the suite in Children's Hospital, while the adult facility is equipped with digital angiographic instrumentation, each providing superior imaging capabilities with smaller doses of contrast material. Computerized multichannel record-

Leon Fridley, R.T. and Linda Kratz, R.N. demonstrate pressure injector for controlling intravenously administered contrast agent.



ing systems provide information about the pumping action of the heart and circulation.

Using the most advanced technology available anywhere in the country, **Dr. Philip A. Ludbrook**, professor of medicine and radiology, and medical director of the Cardiac Catheterization Laboratory, and **Dr. Robert C. McKnight**, director of cardiovascular radiology, together with a team of specialists including radiologists, cardiologists, RNs, radiologic technologists, and cardiopulmonary technicians devote full time to the subspecialty.

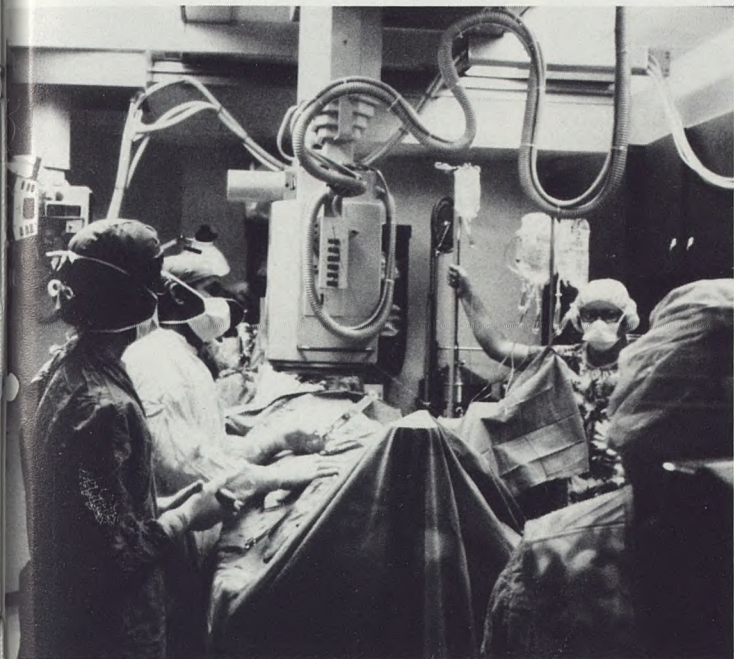
Heart catheterization involves the virtually painless insertion of a "catheter," a soft, flexible hollow tube, through blood vessels, beginning in the groin or an arm and advancing into the chest, until its tip enters the heart. The progress of the catheter is followed on a fluoroscopic television monitor, which enables the operators to view both the chambers of the heart, and the great vessels and coronary arteries.

Visualization of the heart, arteries, and vessels is enabled by the injection of radiopaque contrast material through the catheter. Resulting x-ray images, recorded on 35mm cine film, identify and pinpoint the location of various heart defects, including arterial obstructions, valvular abnormalities, and chamber "pump" dysfunction. With the use of high resolution videorecorders, physicians are able to review the entire radiographic examination, whenever needed, facilitating a complete diagnosis.

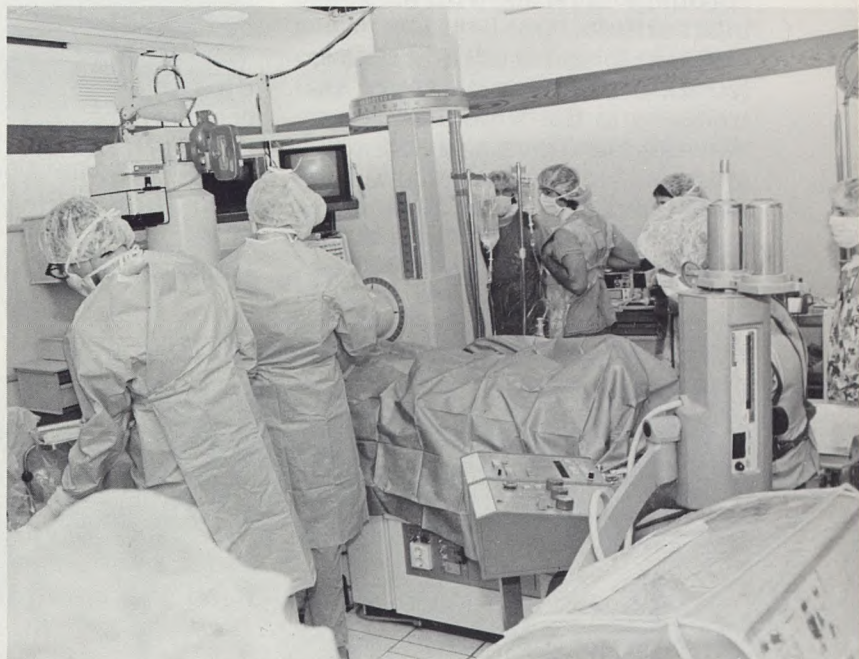
Since first performed at MIR in 1957, the skills and technique of

diology

Catheterization



Catheterization procedure in 3rd floor cath lab as it looked 10 years ago.



MIR cath labs use the most technically advanced equipment available today.

cardiac catheterization have been steadily refined. **Alexis F. Hartmann, Jr., M.D.**, pediatric cardiologist at Children's Hospital, recalls its progression from "primitive and cumbersome" to the present state of the art as practiced in the new catheterization suites.

A quarter of a century ago, he says, the process was comparatively crude and painstakingly slow. "We would insert the catheter and follow its movement through the body to the heart on a small flouroscope. The room was dark, and we couldn't see very much—only one person could watch the flouroscope at a time. Sometimes we would feed the catheter into the heart, to a position we wanted to view, only

to have the catheter shift from that location when we moved the patient for filming," says Dr. Hartmann.

"We could never see exactly what we had until the film was developed, an hour or so later. There were times when we found, after the film was developed, that we had no usable pictures."

Using modern development techniques, cine films are now available within minutes—frequently before the patient leaves the laboratory.

In contrast, each of the new catheterization suites has four television monitors. "We can see exactly what is happening, while we film. We also have an instant-replay device, so that, if necessary, we can review a section of the film

immediately," says Dr. Hartmann.

The film-time ratio has improved ten-fold. In the infancy of cardiac catheterization, radiopaque images were recorded on film at a rate of six frames per second. Today, images are filmed at sixty frames per second, relaying far more accurate information than could be obtained from the procedure years ago.

Improvements in the technology of catheterization, and increasing knowledge of cardiac anatomy and pathophysiology gained in part from the procedure itself, have broadened its application to therapeutic modalities. Two modern treatment procedures utilizing catheterization techniques are: angioplasty (balloon dilation of arteries, veins,

Cardiac Catheterization

and even cardiac valves), and the infusion of thrombolytic drugs which dissolve blood clots in the coronary arteries which cause heart attacks.

Tissue plasminogen activator (**t-PA**), a thrombolytic agent introduced in the United States at Washington University School of Medicine, is administered using catheterization techniques. Like **streptokinase**, t-PA is an enzyme which dissolves clots in the

vessels feeding the heart. Unlike streptokinase, t-PA works selectively on blood clots, with little risk of bleeding complication elsewhere in the body.

TIMI (Thrombolysis in Myocardial Infarction), an ongoing research project sponsored by the National Heart, Lung and Blood Institute is presently comparing streptokinase and t-PA for efficacy and safety when administered to heart attack victims.

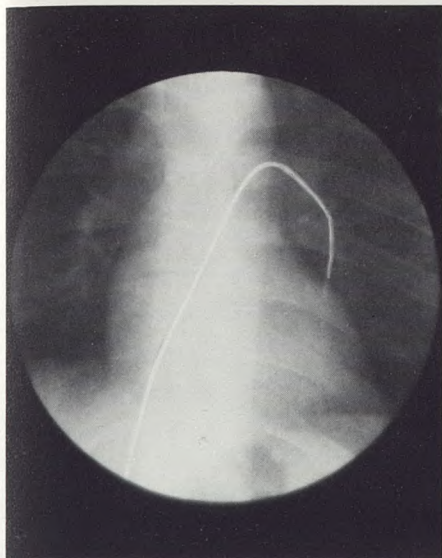
The drugs are given to heart attack victims to dissolve blood clots which have blocked the coronary artery. Since reduction of the eventual size of the heart attack is possible only when coronary blood flow is restored within several hours, cardiac catheterization with administration of thrombolytic drugs is available 24 hours a day.

Catheterization techniques are also utilized to perform heart

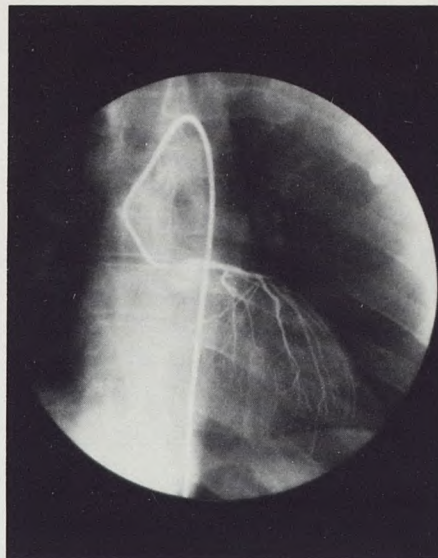
MIR's Cardiac Catheterization Team



Left side of table. Kneeling, Mary Beth Nester, R.N., Todd Ostrihonsky, R.T. Seated, left, Teresa Johnson, R.N., Susan Reinecke, R.N., Therese Felekey, secretary. Standing, left, Eric Miller, C.P.T., Terry Compton, R.T., James J. Spadaro, Jr., M.D., Mike Courtois, C.P.T., Linda Kratz, R.N., Alan J. Tiefenbrunn, M.D., Frank Reed, C.P.T., Julie Darmon, R.N., Robert C. McKnight, M.D., Philip A. Ludbrook, M.D. Right side of table. First row, left to right, kneeling, Al Fischer, C.P.T., Mike Georgen, C.P.T., and Lisa Gavin, R.N. Second row, left, Nancy Ricciotti, R.N., Mary Argent, secretary, Colleen McCarron, R.N., Jim Joerling, C.P.T., and Vicky Bayer, R.N. Back row, left, Fernando Gutierrez, M.D., Sandor Kovacs, M.D., cardiology fellow, Leon Fridley, R.T., Peggy Romero, secretary, Joseph Kenzora, M.D., cardiology fellow.



View of a catheter inserted from the right femoral vein, and passed via the inferior vena cava through the right atrium, right ventricle, and pulmonary artery into the pulmonary arteriolar "wedge" position in the left lung.



View of a Judkins left coronary catheter inserted from the right femoral artery and passed up the aorta into the ostium of the left coronary artery. Radiographic contrast has been injected through the catheter into the left coronary artery which is opacified, producing a coronary arteriogram.

muscle biopsies. Tiny pincers on the end of a specially devised catheter, which is inserted through the jugular vein, can be maneuvered to remove minute samples of heart muscle. Examination of this muscle tissue can reveal evidence of myocarditis (inflammation of the heart), adverse side effects of certain anti-cancer drugs, and early signs of transplant rejection, enabling cardiologists to begin anti-immune therapy to combat rejection at a time when it may be most effective.

All catheterization procedures, from the simplest to the most complex, require team cooperation, each member of the MIR team playing a unique and important role. In addition, a close liaison liaison exists between the cardiologists and cardiac radiologists providing essential communication and combination of expertise, and optimizing the diagnostic, therapeutic, and investigative prowess of the team.

The MIR catheterization laboratory procedures are performed by Dr. Ludbrook or another of the team cardiologists—**Drs. Alan J. Tiefenbrunn, James J. Spadaro, Jr. and Peter B. Kurnik.** Teaching is an impor-

tant consideration in the catheterization facility. Cardiology fellows assisting with the procedures are constantly supervised within the controlled medical and teaching environment. Radiologic technologists, cardiopulmonary technicians, and RNs receive special training for their roles in the procedure.

Supervising and interpreting all radiographic procedures are **Drs. Robert McKnight**, director of cardiovascular radiology, and **Fernando Gutierrez**, assistant director. Their expertise in performing pulmonary angiograms and aortograms, as well as in training radiology fellows and residents to perform these invasive procedures, further extends the scope of the facility. In addition to reading films and reporting on all angiograms, the radiologists, in consultation with the cardiologists, review data on all cardiac cases.

Using the most technically advanced equipment available, the MIR team performs over 2,000 catheterizations per year with an exceptional record of safety and diagnostic accuracy. "Each catheterization procedure is a satisfying accomplishment" says Dr. Ludbrook. "Each individual pa-

tient benefits. The patient with cardiac disease receives diagnostic information that is vital to her or his treatment—whether medical or surgical, and may be encouraged by the prospect of what that treatment may offer. A very special benefit is that it can also prove the absence of heart disease. This is comforting reassurance for the patient who is thus freed from the stigma of cardiac disease and enabled to resume a normal life. The availability of new therapeutic techniques such as coronary angioplasty may be an incomparable advantage in selected patients, by relieving coronary stenoses without the need for open-heart surgery."

“Our greatest satisfaction derives from the gratitude of each patient we manage. Patients with known or suspected heart disease are worried about their condition—and are particularly anxious about invasive catheterization procedures. Apart from acquisition of accurate, comprehensive diagnostic information, our entire team is oriented toward compassionate reassurance and encouragement of the patient, as well as toward comfort and safety.”

"It was better than I expected" is the parting comment of most of our patients. ■

*Dr. Alexis Hartmann and
Dr. Nathan Beraha*



MIR's Cardiac Catheterization Team at Children's Hospital

Progress means "saving young hearts"

For MIR's cardiac catheterization team at Children's Hospital, progress means "saving young hearts."

Whereas, thirty years ago, medicine could offer relatively little to children suffering from severe heart disease, **Dr. Alexis F. Hartmann, Jr.**, a pediatrician at Children's Hospital who has served Washington University Medical Center for thirty years, can now say that "because of open heart surgery and our improved diagnostic techniques, we are able to help 90% of the children we see."

Heart problems among children and infants are usually congenital in origin—with as many as one percent, or 37,000, of the approximately 3.7 million babies born in the United States each year suffering from some heart defect.

According to Dr. Hartmann, the most common heart diseases of the young are atrial septal defect and ventricular septal defect

(a hole in the atrium or ventricle) and the tetralogy of Fallot, an anomaly of the heart which has four symptoms: displacement of the aorta, interventricular septal defect, enlargement of the right ventricle, and narrowing of the pulmonary artery.

Pediatric catheterization, Dr. Hartmann's specialty, has greatly improved the quality of treatment available for children with these problems, and the quality of life that they are able to enjoy. Since 1960, when he began performing the catheterizations, Dr. Hartmann has used the procedure on perhaps 5,000 children. And, each year, as technology advanced, the number of success stories with these children increased.

Technological progress has further enabled Dr. Hartmann and his associates to use the technique on younger and younger children. "Early in the game, we were seeing mainly older children. Now, the group includes infants and even premature ba-

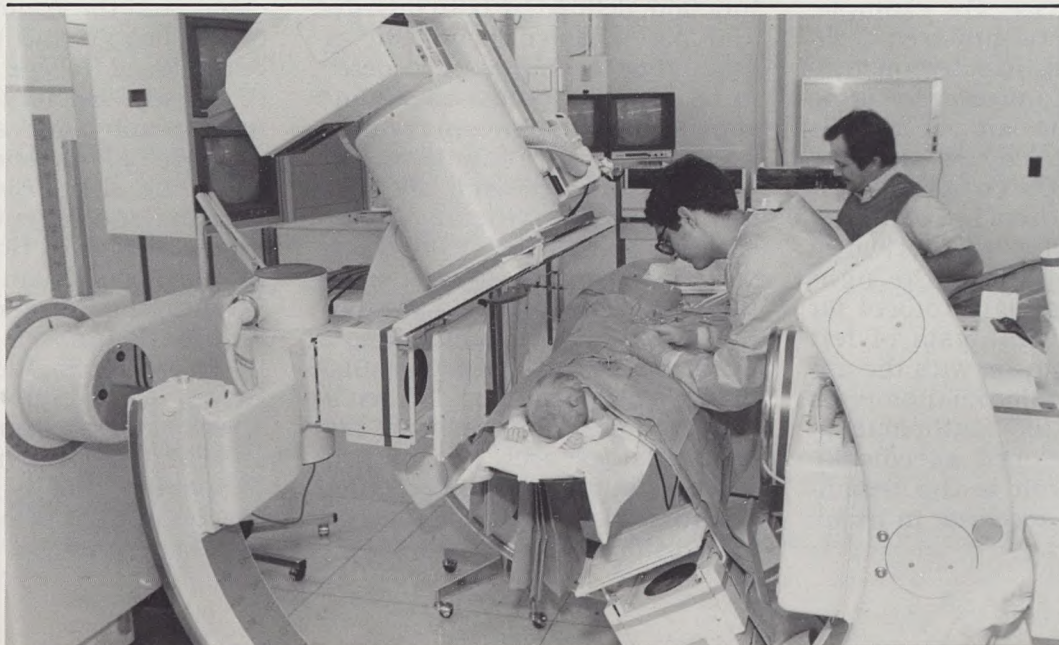
bies," says Dr. Hartmann.

As an anecdote to the developments in heart care that have evolved over the past few decades, Dr. Hartmann relates the story of a young girl on whom he performed a catheterization last summer. The procedure showed that she had an atrial septal defect, which was successfully corrected in surgery subsequent to her catheterization.

The telling part of the story was that, in 1960, Dr. Hartmann had performed a catheterization on her father, then a seven-year-old boy. He, too, suffered from an atrial septal defect that was surgically corrected.

"We're beginning to run into a second generation of children with heart defects," says Dr. Hartmann. What it means is that, with advanced technology and medical skill, those children are now living long enough to have children of their own, something they might not have done as recently as thirty years ago. ■

MIR's multimillion dollar cardiac catheterization suite located at Children's Hospital.
Dr. Nathan Beraha and Dr. Fernando Gutierrez

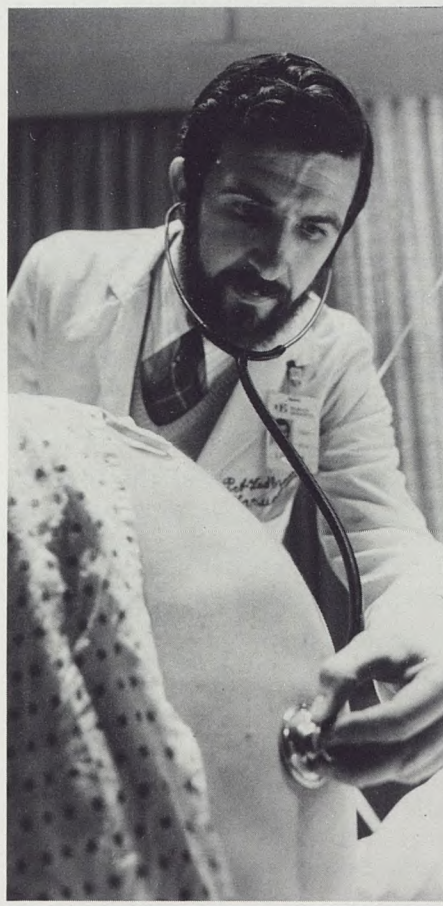


Physician, Teacher, and Researcher

Dr. Philip Ludbrook

In addition to supervising medical care in Mallinckrodt's cardiac catheterization laboratory for the past eleven years, Dr. Ludbrook has made a significant impact on the understanding of cardiac function through his continuing independent research. Supported by an individual investigator grant from the NIH, his studies in the area of hemodynamics, or the mechanical function of the heart, have concentrated particularly upon diastolic behavior; the function of the heart as it relaxes and fills with blood between beats.

Dr. Ludbrook's studies have contributed both to the characterization of normal diastolic function, and to the definition of its response to influences such as coronary artery disease and heart attacks, certain drugs, radiographic contrast material, and isometric exercise. For example, data from several hundred catheterization cases has demonstrated that diastolic pressure-volume behavior in the left ventricle is subject to and may be modified by changes in the structures surrounding the heart—including coronary arteries, the pericardium, and importantly, the right ventricle. A special protocol for computerized analysis of left ventricular behavior, with the use of catheter tip micromanometers and sophisticated mathematical modeling developed specifically for this research is the benchmark for such research in many centers.



Philip A. Ludbrook, M.D., examines a patient prior to catheterization procedure.

He also studies other indexes of cardiac systolic (pump) and diastolic (relaxing and filling) function, defined by both invasive and non-invasive (echo and radionuclide) techniques, to determine which are most useful and sensitive for diagnosing abnormalities of heart function. The result of this research are then further applied to therapy-oriented studies which define the effects of various cardiac therapy drugs upon the diastolic and systolic properties of the heart. Also a participant in the cardiovascular division's Specialized Center of Research in ischemic heart disease, his research in this program is designed to help ascertain whether dissolution of the clot and restoration of blood supply

is actually beneficial to cardiac muscle and chamber function in patients with acute heart attacks.

Dr. Ludbrook was born in Adelaide, South Australia, and undertook his medical and cardiological training in Australia and subsequently in London, U.K. He came to Washington University in 1973 from the University of California, San Diego, where he was for two years a clinical research fellow of the Australian National Heart Foundation.

He is an associate editor of **Circulation**, the official publication of the American Heart Association, and is an editorial consultant for nine other professional journals. He has published more than 100 manuscripts and abstracts in professional medical journals. He is a fellow of the Royal Australian College of Physicians, the American College of Physicians, and the American College of Cardiology and is a member of the Royal College of Physicians (U.K.), the Society for Cardiac Angiography, and several other professional societies. He is the chairman of the Electrical Environment and Patient Safety Committee at Barnes Hospital and of the Reviewing Committee of the Washington University Human Studies Committee.

His family includes his wife, Helen, who holds a master of divinity degree from the University of the South, Sewanee, Tennessee, and is an ordained deacon in the Episcopal Church, and three sons aged 11, 16, and 20.

1983-84 Residents, Fellows, and Trainees



Front row, left, Drs. Worthington, Unger, Balogh, Ward, Picus, Laakman, chief resident, Evens, radiologist-in-chief and director of MIR, Adler, co-chief resident, Middleton, Shackelford, director of residency training, Karnaze, Schwimmer, Mendlowitz. Center row, Drs. Winthrop, Reinus, Berzins, Weiss, Neeley, Teng, Law, James, Semenkovich, Goodhope, Ganz, Claiborne, Albright. Back row, Drs. Weinstein, Niemeyer, Katz, Chang, DiSantis, Conway, Getz, Mulholland, Bolding, Martin, Liebsch, Wright, Tobler, Palaskas.

CITY-WIDE RADIOLOGY CONFERENCE

St. Louis, Missouri, 1984-1985
5:30 P.M.

RESPONSIBILITY FOR CLINICAL MATERIAL Second Session (7:15-8:15 p.m.)

DATE	TOPIC AND PLACE	SPEAKER	
11/12/84	Recent Advances of MRI in Neuroradiology	Sadek K. Hilal, M.D. Professor of Radiology and Director, Neurological Institute of New York Columbia University, New York, New York	Mokhtar Gado, M.D., and Neuroradiology Staff
12/10/84	No City-Wide		
1/14/85	St. Louis University	To Be Announced	
2/11/85	Digital Radiography	R. Gilbert Jost, M.D. Associate Professor of Radiology Washington University School of Medicine Mallinckrodt Institute of Radiology	R. Gilbert Jost, M.D., and Michael W. Vannier, M.D.
3/11/85	Interventional Radiology	Arthur C. Waltman, M.D. Associate Professor of Radiology Massachusetts General Hospital Boston, Massachusetts	Abdominal Section, MIR
4/8/85	Leroy Sante Lecture St. Louis University	To Be Announced	
5/13/85	MRI	To Be Announced	

NEWS

Visiting Professors/ Guest Lecturers

Harvey S. Glazer, M.D., spoke on "Pitfalls in Mediastinal CT" and "CT Manifestations of Pulmonary Collapse" as a guest lecturer for the Michigan Radiological Society in Detroit, Feb. 2.

Joseph K.T. Lee, M.D., spoke on "NMR of the Genitourinary Tract" and "NMR of the Lymphadenopathy" and gave a one-hour case presentation on CT of the GI Tract as a visiting professor at the Medical College of Wisconsin at Madison, May 10-11.

Armand Diaz, R.T., R.N., FASRT, served as visiting professor and honored guest at the 50th anniversary commemoration of the Catholic University of Chile Medical School in Santiago, May 14-15. Entitled, "How to Organize and Run a Radiology Service," his faculty seminar was of particular interest to the radiologists, administrators, government officials, technologists, and architects who attended, because this subject had not been previously addressed in their country. A broad overview of complex organizational structures was presented, including such topics as: program planning, purchasing (equipment), inventory control, personnel organization and management, and budget/information/computer systems management.

Mr. Diaz was invited to speak by **Dr. Isidro Huete**, chairman of the university's radiology department, and former MIR instructor and neuroradiology fellow (1974-77).

Bahman Emami, M.D., served as a guest lecturer and presented a symposium on "Hyperthermia" for the Mid-South Chapter of the American Endocurietherapy Society meeting at the University of Tennessee Medical School in Memphis on May 19.

Glenn P. Glasgow, Ph.D., served as guest lecturer and spoke on "Observations on ALARA and Personnel Dosimetry" for the American Nuclear Society Annual Meeting in New Orleans, June 6.

Louis A. Gilula, M.D., served as a visiting professor at the Royal Northshore Hospital in Sydney, Australia, June 18-22, and as Visiting Professor for 1984 for the Alfred Hospital Whole Time Medical Specialists in Melbourne, Australia, June 25-29, where he presented the following lectures: "Localised Intr Arterial Streptokinase Treatment;" "Arthrogram;" "Lumbar Spine;" "Is this an Adequate Knee Arthrogram?;" "An Approach to Trauma;" "Radiography and Trauma of Hand;" "Cervical Spine Trauma;" "CT of Neoplasms of Musculoskeletal System;" "CT of Foot and Ankle;" "Venography;" "Bone Tumors;" "Facet Syndrome;" "Roentgenographic Approach to Hand Problems;" and "Arthrography of Shoulder and Ankle."

Stuart S. Sagel, M.D., served as a guest lecturer at St. Vincent's Hospital in Dublin, Ireland, Sept. 10-15.

Conferences/ Symposia/Meetings/ Seminars/Courses

Carlos A. Perez, M.D., attended conferences and made the following presentations: "Radiotherapy's Role in Breast Cancer," "Gynecologic Cancer," and "Lung and Gastrointestinal Cancers" for the UCLA Winter Oncology Conference in Los Angeles, Mar. 1-3; "Biological and Physical Basis of Hyperthermia in Cancer;" "Hyperthermia in Cancer Therapy: Clinical Experience and Results," and "Radiation Therapy in Definitive Management of Carcinoma of the Prostate" for the University of Texas, San Antonio Grand Rounds,

Apr. 5-6; "Role of Radiation Therapy in Ovarian Cancer" and "Preoperative or Postoperative Radiation Therapy in Bladder Carcinoma" for Cancer Update 1984 at Merrillville, Indiana, Apr. 14; "Patterns of Failure in Localized, Unresectable Non-Oat Cell Carcinoma of the Lung Treated by Radiation Therapy" for the American Society of Clinical Oncology meeting in Toronto, Canada, May 6-8; "Hyperthermia: A Potentially Effective New Modality for Cancer Therapy" for Mt. Sinai Medical Center in Cleveland, Ohio, May 22; "Clinical Results with Irradiation and Local Microwave Hyperthermia in Cancer" and "Hyperthermia and Radiation" for the Fourth International Symposium on Hyperthermia Oncology in Aarhus, Denmark, July 2-6; "Applications of Hyperthermia in the Treatment of Head and Neck" and as a panel discussant, "Hyperthermia," for the International Conference on Head and Neck Cancer in Baltimore, Maryland, July 22-27; and "Advances in Radiotherapy" for the 4th Congress of Colombian Physicians in the United States in Miami, Florida, Aug. 2-4.

William A. Murphy, M.D., attended conferences and made the following presentations: "Musculoskeletal Magnetic Resonance Imaging," a refresher course for the annual meeting of the American Roentgen Ray Society, Las Vegas, Nevada, April 13; "Multispectral Analysis of NMR data," "NMR of Skeletal Muscle," and "NMR of Ischemic Bone Disorders" for Nuclear Magnetic Resonance 1984: National Symposium, Orlando, Florida, May 9; "Magnification Radiography of the TMJ," and "TMJ Arthrography" for Internal Derangements of the Temporomandibular Joint at the University of California, San Francisco, June 15; and "Magnetic Resonance Imaging of the Body, Parts I and II" for the 2nd Annual Radiology Conference at The Greenbriar, White Sulphur Springs, West Virginia, July 13.

S UPDATE

Dr. Murphy was the opening moderator of the 4th Annual TMJ Seminar held Sept. 30-Oct. 1 at the Chase Hotel, St. Louis. The program included lectures and discussions on diagnostic theories and techniques and treatment modalities, including both appliance therapies and surgical procedures. **William Totty, M.D.**, moderated a session on pathophysiology.

James A. Purdy, Ph.D., presented the following talks: "Compensating Filter Design and Use in Radiation Therapy" for the 10th Varian Users Meeting in Palm Springs, California, April 15-17, and "Dosimetry and Treatment Planning Considerations for Electron Arc Therapy" for the 4th Varian European Meeting in Malta, May 25-27.

Joseph K.T. Lee, M.D., served as a faculty member for the Annual Washington Imaging Conference, Washington, D.C., Apr. 30-May 4 and made the following presentations: "CT of Biliary Tract," "MRI and CT of the Liver," "MRI and CT of the Pelvis," and "MRI and CT of the Pancreas."

Harvey S. Glazer, M.D., made the following presentations: "Recent Advances in Magnetic Resonance Imaging" for the Charles D. Branch Symposium at the St. Francis Medical Center, Peoria, Illinois, May 2, and "Magnetic Resonance Imaging of the Thorax and Heart" for the Magnetic Resonance Imaging General Overview Seminar at University Park Imaging Center, Urbana, Illinois, July 14.

Delia M. Garcia, M.D., spoke on "Current Therapeutic Approaches to Carcinoma of the Ovary: Radiotherapy Techniques and Results" at the Fourth Annual Radiation Oncology Course sponsored by the Medical College of Virginia in Williamsburg, May 26.

SECOND INTERNATIONAL CONFERENCE ON MALIGNANT LYMPHOMA Lugano, June 13-16, 1984



Todd H. Wasserman, M.D., in Lugano, Italy

Todd H. Wasserman, M.D., made the following presentations: "Current Treatments with Radiation Therapy" at an interdisciplinary conference on non-Hodgkin's lymphoma held at Barnes Hospital, May 16; "Perspectives of the Radiation Oncologist" for a conference on "Elements of Excellence in Cancer Patient Care" at the McDowell Cancer Network of the University of Kentucky at Lexington; and "The Treatment of Diffuse Large Cell Lymphomas of the Head and Neck Region Treated with Radiation Only" for the Second International conference on Lymphomas held in Lugano, Italy, June 13-16, and attended by 800 people representing worldwide medical institutions dealing with lymphomas. Dr. Wasserman was also invited to speak on the clinical trials with radiosensitizers in the United States at the 4th International Conference on Radiosensitizer and Radioprotective Drugs in Fermo, Italy, Aug. 29-Sept. 5.

Mokhtar Gado, M.D., Fred J. Hodges, M.D., and Klaus J. Sartor, M.D., co-authored the paper, "Cranial and Spinal MR Imaging with a Superconducting Magnet" for the 65th German Roentgen Congress in Baden-Baden, Germany, May 31-June 2.

Michael W. Vannier, M.D., made the following presentations: "Comparison of the Imaging Properties of Pluridirectional and Linear Tomography" for the FDA Center for Devices and Radiological Health Seminar, Rockville, Maryland,

June 13; "Clinical Applications of 3-D Reconstruction" for the 1984 Summer Semester Seminar Series sponsored by the Medical Imaging Section of the Department of Radiology at the University of Pennsylvania, Philadelphia, July 20; "Surgical Simulation using Computer-Aided Design and CAD/CAM Techniques" for an accredited, day-long course, "Medical and Biological Applications of Computer Graphics," at Siggraph '84, Minneapolis, Minnesota, July 23; "High Resolution Computed Tomography for Solid Modeling and Computer-Aided Design" for the Topical Meeting on Industrial Applications of Computed Tomography and NMR Imaging sponsored by the Optical Society of America in cooperation with Atomic Energy of Canada, Limited and Shell Development Company, Hecla Island, Manitoba, Canada, August 13-14; and "3D Imaging and Solid Modeling of Tumors, Based on CT Scans" at a Hyperthermia for Cancer symposium sponsored by the Academy of Medicine of New Jersey in Lawrenceville, Oct. 13.

Bahman Emami, M.D., presented two papers and posters for the Fourth International Hyperthermia Oncology Symposium in Aarhus, Denmark, on July 2-6.

Glenn P. Glasgow, Ph.D., made the following presentations, "An ALARA Program for a Large Brachytherapy Service" and "Are Current Personnel Monitors Adequate Around Very High Energy LINACS?," at the American Association of Physicists in Medicine Annual Meeting in Chicago, July 15-19.

Stuart S. Sagel, M.D., made the following presentations, "CT of the Pancreas," "CT of the Pleura and Pericardium," and "Transthoracic Needle Aspiration Biopsy" for the Imaging Conference at Mackinac Island, Michigan, Aug. 12-16.

NEWS

Fellowships in American College of Radiology

MIR faculty named 1984 fellows in the American College of Radiology during the 61st Annual Meeting, September 15-20 in Los Angeles, California, are **G. Leland Melson, M.D.**, professor of radiology and chief of diagnostic ultrasound, and **William A. Murphy, M.D.**, professor of radiology, co-chief of the musculoskeletal section, and co-chairman of magnetic resonance imaging.

Honors/Awards

David J. Monyak, M.D., and **Perry W. Grigsby, M.D.**, chief and assistant chief residents in MIR's division of radiation oncology, have each been awarded regular clinical fellowships of \$6000 from the American Cancer Society. This award is presented in recognition of promising research in clinical oncology.

Committee

Beverly Kobeissi, administrator in Mallinckrodt's division of radiation oncology, has been named a member of an advisory committee to the St. Louis Public Schools for the 1984-85 school year. The St. Louis Public School system is establishing a medical/legal secretarial program and the five-person advisory committee will offer assistance and provide information on current developments in business, industry, and labor. Ms. Kobeissi, representing Washington University School of Medicine, will be serving with representatives from St. Louis Community College, the St. Louis Public Schools, and two area law firms.

Elected

G. Leland Melson, M.D., has been elected scientific program coordinator of the Greater St. Louis Society of Radiologists for the 1984-85 term beginning September 18, 1984.

Appointments

Glenn P. Glasgow, Ph.D., has been appointed to serve on the following committees: membership committee of the Health Physics Society; the continuing education committee, department of nuclear engineering, University of Missouri at Columbia; and chairman of the ethics committee of the American Association of Physicists in Medicine.

William A. Murphy, M.D., has been appointed a member of the editorial board of a new journal, "Journal of Health Care Technology: Assessment, Planning and Value Analysis."

James A. Purdy, Ph.D., has been appointed to serve on the following committees and/or boards: governing board and committee on educational policy for The American Institute of Physics; committee on physics and radiation biology and committee on public and professional communication of the American Society of Therapeutic Radiologists and Oncologists.

Workshops

Mokhtar Gado, M.D., **Fred J. Hodges, M.D.**, and **Klaus J. Sartor, M.D.**, presented two papers, "MR Imaging with the 0.35 T Magnetom: Technical Considerations and First Results in Intracranial Tumors" and "MR Imaging with the 0.35 T Magnetom: Technical Considerations and

First Results in Diseases of the Brainstem and Spinal Cord" for the MR Workshop at the University of Erlangen, Germany, Apr. 27-28.

Joseph K.T. Lee, M.D., served as a faculty member for the Postgraduate Workshop in Clinical NMR, Baylor College of Medicine, Houston, Texas, May 25.

Bahman Emami, M.D., served as a panel discussant for the Lung Cancer Workshop sponsored by the International Association for the Study of Lung Cancer, Cambridge, England, June 25-30.

Carlos A. Perez, M.D., made the following presentations: "Temperature-Time Doses and Tumor Control" for the American Cancer Society Workshop on Hyperthermia in Cancer in Tucson, Arizona, Mar. 19-21, and "Carcinoma of the Lung: Dose-Time Parameters" for the IASLC Workshop on Radiotherapy for Lung Cancer in Cambridge, England, June 26-30.

Harvey Glazer, M.D., presented the paper, "NMR of the Body," for the Postgraduate Workshop in Clinical NMR, Baylor College of Medicine, Houston, Texas, June 29.

Mallinckrodt Institute's division of radiation oncology sponsored its first two-day workshop on the use of hyperthermia in cancer treatment on Sept. 13-14. Lectures made by physicians, **Drs. Carlos A. Perez** and **Bahman Emami**; physicists, **Drs. Gilbert Nussbaum** and **Ronald Johnston**; and guest lecturers included the following topics: the rationale for the use of heat in cancer treatment, physical principles, thermal dose, combining hyperthermia with radiation therapy,

S UPDATE

quality assurance, and a review of clinical experience and results. The fifty participants were also able to observe actual hyperthermia treatments and discuss treatment methods and techniques with physicians, physicists, and technicians.

Jay P. Heiken, M.D., presented "Clinical Magnetic Resonance Imaging of the Body" for a postgraduate workshop in clinical MRI at Baylor College of Medicine, Houston, Texas, on Sept. 28.

Oncology Update

"Recent Advances in the Diagnosis and Treatment of Cancer of the Breast and Colo-Rectum" will be the topic of the third annual Oncology Update Program, to be held Friday, November 9, at St. Luke's Hospital West. Sponsored jointly by the radiation oncology divisions at Mallinckrodt Institute of Radiology and St. Luke's Hospitals and the Continuing Medical Education Office at Washington University School of Medicine, the seminar, offered to physicians, residents, and all allied health care staff, will be led by expert faculty from both hospitals, as well as a number of distinguished guests.

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"HEALTH MATTERS" TV Series

Mallinckrodt physicians, **Drs. Carlos A. Perez**, director of the division of radiation oncology, **William A. Murphy**, co-chief of the musculoskeletal section, **Bruce L. McClennan**, chief of abdominal radiology, and **Todd Wasserman**, associate professor of radiology in the division of radiation oncology, will be guest interviewees on "HEALTH MATTERS," a series of 26 television documentaries on health care and technology videotaped, in part, at the institutions of Washington University Medical Center (WUMC).

Airing on KETC-TV (Channel 9) on Sundays at 7:30 p.m. (with repeat showings on the following Saturdays at 11:30 a.m.) starting October 7, each weekly show will cover a different health (or

medical) topic.

Dr. Wasserman is featured in the October 28 show, which focuses on the latest developments in cancer treatment, including radiation implants and chemotherapy pump implants. On December 23, Drs. Murphy and McClennan will discuss ultrasound, thermography, and digital subtraction angiography—followed by a short segment on magnetic resonance imaging. On the evening of December 30, Dr. Perez and Dr. Samuel Wells, head of the department of surgery at WUMC, will discuss advances in mammography, the treatment of breast cancer, and reconstructive surgery following a mastectomy.

MAMMOGRAMS: An adjunct service for Barnes Screening Center

In the successful treatment of breast cancer, early detection is a paramount factor. For this reason, Mallinckrodt Institute of Radiology performs mammograms (x-rays of the breast) in conjunction with a new breast cancer screening program offered by Barnes Hospital's Health Education and

Screening Center.

All women over forty, and those with high risk factors such as a family history of breast cancer or a pregnancy after the age of 30, are referred to Mallinckrodt's outpatient facility for a mammogram. The diagnostic exam, including a review of the patient's history, takes 20 minutes and can detect lumps as small as one centimeter in diameter. If necessary, other tests may be ordered at Mallinckrodt. Breast ultrasound, which uses sound waves, may be used to evaluate patients with fibrocystic disease and to determine if a mass is cystic or solid. Light scanning, still under investigation, uses infrared light to locate cysts, and is based on the principal that normal and abnormal tissues respond differently to the light.

When all tests are completed, the patient returns to the screening center where the results are evaluated and discussed with the physician.

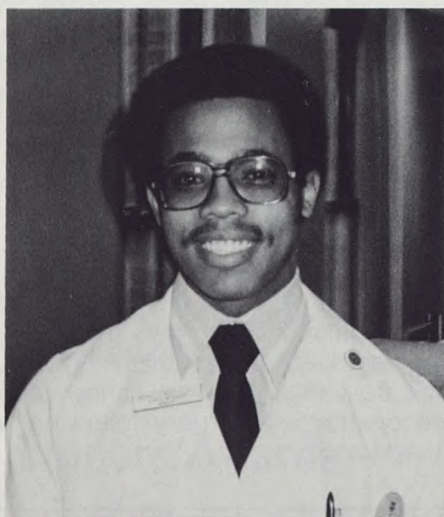
From the



Armand Diaz,
R.T., R.N., FASRT

Technical Administrator...

Named Assistant Program Director



Michael D. Ward, R.T.B.S., senior staff technologist and clinical instructor, has been named assistant program director in radiography effective September 1.

Michael, an MIR technical staff mem-

ber since 1976, will be assisting in the direction, supervision, organization, and periodic review of academic and clinical education efforts in Mallinckrodt's School of Radiologic Technology. He will also help conduct general faculty meetings and coordinate opportunities for continuing education of faculty members in the school.

Graduating from the Mallinckrodt School of Radiologic Technology in 1976, Michael received a bachelor's degree (magna cum laude) in radiological sciences from St. Louis University in 1981. He is presently enrolled in the graduate program in educational administration at the University of Missouri, St. Louis.

In addition to receiving numerous first place awards in technological competitions, Michael received the 1983 Mallinckrodt Fellowship Award from the 4th District Missouri Society of Radiological Technologists (MSRT) and since

1979, has held various offices including president and chairman of the board of both the Missouri Society of Radiological Technologists and 4th District MSRT. He is a member of the membership development committee of the American Society of Radiologic Technologists and is listed in "Community Leaders in America."

He has published papers which have appeared in the publications, **Radiologic Technology** and **Missouri Radiographer**, and presented lectures and seminars on various topics including, medical and legal aspects of radiology, fluoroscopic techniques for knee arthrography and computed tomography, and imaging processes and management for the American Society of Radiologic Technologists, the Missouri Society of Radiologic Technologists, the Ochsner Medical Foundation in New Orleans, Louisiana, and Xerox and Dupont Corporations. ■

Awarded Degree

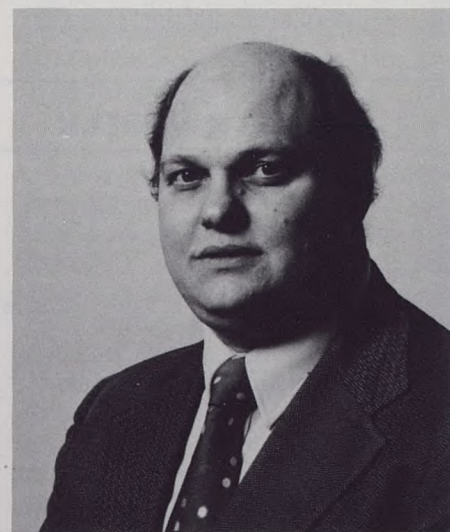
Congratulations are in order for **Norman L. Hente, R.T.**, supervisor of MIR's medical photography department. Already a recipient of numerous awards and acknowledgements, Norm recently completed a bachelor of science degree in health studies from Western Michigan University. This accomplishment represents yet another stepping-stone in his quest for comprehensive education and career enhancement.

Creativity and innovation have characterized Norm's work at MIR. Hired as a special procedures technologist in 1966, he quickly progressed through a variety of technological responsibilities. Within two years, he was drafted into

the field of medical photography. There, he has remained, developing new skills and knowledge as the field has exploded with opportunities.

Under Norm's supervision, medical photography at Mallinckrodt has undergone dramatic expansion. In 1967, the department's services included only two procedures: producing black and white slides and developing x-ray duplicates. An industrial camera was the only tool. In its first year, the department produced 23,500 pieces of work.

Seventeen years later, medical photography is a full service photography department. Services include all forms of photography, copying, and video recording and duplication, as well as



production of prints and transparencies for medical exhibits. Approximately twenty different camera and film products are required to perform these tasks. In the past year, over 98,000 slides, prints, and transparencies were produced by Mallinckrodt's medical photography department.

Norm is proud of his role in these changes and developments. He is grateful for the cooperation and support of **Tom Murry**, medical photographer, without whom, the increased workload would be unmanageable.

Using photographic techniques to develop teaching aids for physicians is a particularly rewarding task for Norm. "Every lecture at Mallinckrodt is educational, whether it be interdepartmental or for the public," he says. "Providing the radiologist with high quality slides—often on short notice—is one of our department's important functions."

Extensive association with professional organizations and participation in continuing education programs have enabled Norm to keep abreast of developments in fields other than photography. An active member of both the American and Missouri Societies of Radiologic Technologists, he has attended numerous educational seminars and symposiums. The health studies program he recently completed at Western Michigan University is designed for adult students who are certified health professionals.

Crediting MIR with "fostering an atmosphere conducive to the pursuit of education," he expressed his appreciation to **Mr. Armand Diaz, technical administrator**. "Mr. Diaz is a strong proponent of continuing education and has supported me in all my academic and professional endeavors."

Adapting to changes in the health care field has been the hallmark of Norm's work at MIR. Future developments and further education are challenges that await. ■

Bi-State Meeting

Approximately 600 members of the Missouri and Illinois Societies of Radiologic Technologists attended a joint annual meeting, held October 3-6, at the Clarion Hotel in St. Louis. Noted physicians, technologists, and business managers presented a series of lectures for which 48 continuing education credits were approved. Guest faculty from MIR and their topics of discussion included:

R. Gilbert Jost, M.D.—"Computer Applications in Radiology"

Michael W. Vannier, M.D.—"Cranio-Facial Reconstruction"

Robert Wagner, M.B.A.—"Economic Forces Affecting the Practice of Radiology"

Mokhtar Gado, M.D.—"Neuroradiographic Procedures in CT and NMR"

Donald R. Bernier, C.N.M.T., R.T.(N)—"Quality Assurance: Need or Burden?"

Paul Hanson, C.N.M.T., R.T.(N)—"Testicular Scanning"

Mary T. Clarke, C.N.M.T., R.T.(N)—"Aerosol Lung Scanning: Infusaid Pumps for Intra-Arterial Chemotherapy"

Glenn Glasgow, Ph.D.—"General Topics in Radiation Safety"

G. Leland Melson, M.D.—"Recent Advances in Abdominal Imaging" ■

First day of training



Bettye James, R.T.T., and radiation therapy student, Kevin Dehanty, R.T., review one of the procedures included in the helpful reference manual.

New technology students in radiation oncology are grateful for the insight and hard work of **Bettye James, R.R.T.**, chief technologist and technical director of the radiation therapy training program. Bettye organized and compiled material for the division's comprehensive handbook, **Policies and Guidelines for Students**, which includes policies that have developed at MIR over the years and accreditation guidelines set down by the joint review committee of allied health care. Since 1983, this excellent reference tool has been available to all incoming students. ■



Volunteer Service

An important function of the Mallinckrodt Institute public relations department is its clipping service—maintaining a file of the highlights of print media coverage each year. To help with this task, MIR is fortunate to have **Helen Boyles**, a dedicated Barnes volunteer. Since 1981, she has clipped and cataloged nearly 400 pages of published news stories about MIR's staff, radiological research, and technical developments in the diagnosis and treatment of disease. ■

Congratulations, Graduates



Class of '84 Graduates 20 Radiologic Technologists

Front row, left, R.T.s Anita Rodgers, Mary Beth Welker, Valinda Hood. Second row, R.T.s Mark Brilllos, Elissa Shaffer, Robin Haverman, Sharon West, Mary Breihan, Theresa Harris, Tracy Kidd, Monica Kaur. Third row, R.T.s Alex Jahncke, Ken Crawford, Charles Morse, Charles Schaab, Kenneth Hirstein, Steven Stiffler, Thomas Maloney, Kenneth Williams, Douglas Winkler.



Radiation Oncology

Seated, left, R.T.T.s Nancy Cook, Ann Theisen, Lisa Kraft. Back row, left, R.T.T.s Sue King-Nunamaker, John Law, Sherry Sullivan, Amanda Lehmann.

Nuclear Medicine

Left, C.N.M.T.s Cindy Bradley, Ann Mehler, Lydia Kuyama, Linda Nolte, Janis Elwick.



Welcome, New Students



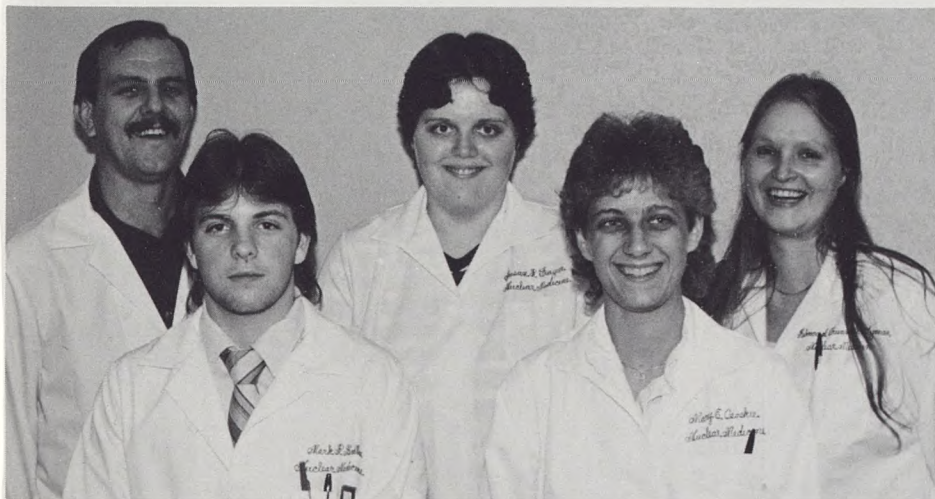
24 Students Enrolled in MIR Radiologic Technology

Front row, left, Michael Rawlins, Kathleen Rowden, Mary Watz, Linda Robedeau, Nancy Kucik, Marcia Compton, Kerry Reller, Kim Siefert, Mary Helfrich, Gregory Davis. Second row, Marcia Haynes, Kathy McMahon, Sheila Aholt, Tara Thrasher, Tonya Slinkerd, Julia Wright, Patricia Nagel. Third row, David Basler, Anthony Miyat, Jeffrey Townsend, James Fletcher, Jeffrey Dossett, Marvin Wilkinson, Thomas Renaud, Todd Williams.



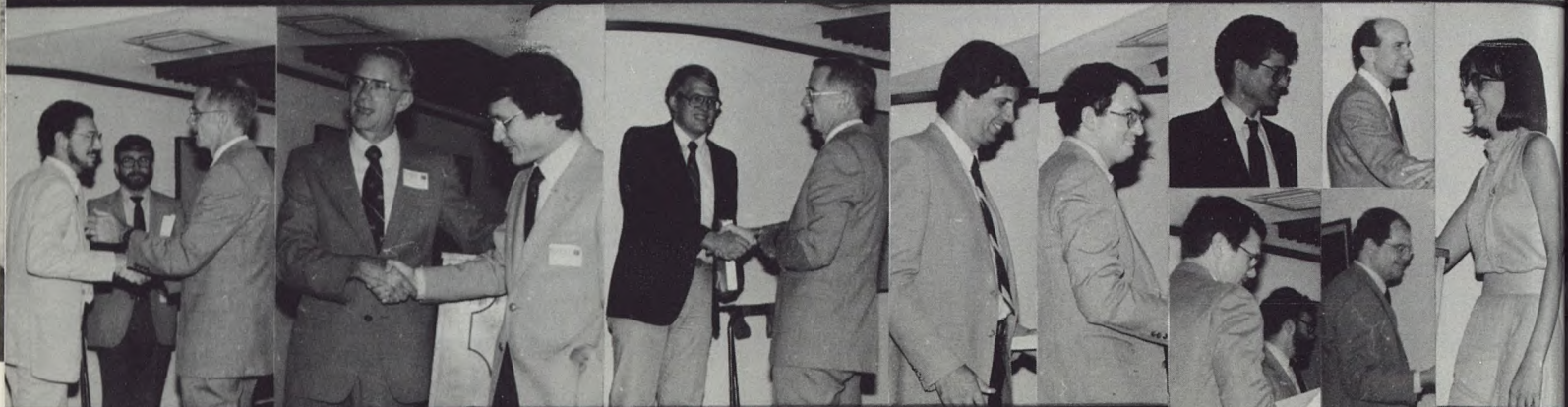
Radiation Oncology

Front, left, R.T.s Kevin Dehanty, Patricia Muller, Mary Ellen Brenner, Mary Beth Welker, Catherine Keence, Rose Ahrens. Back row, R.T.s Colette Moseley, Lynda Brueseke, Cynthia Johnston, Thomas Moynihan, Stephanie Hanneke, Mimi Baker.



Nuclear Medicine

Front, R.T.s Mark Brilllos, Mary Ososkie. Back, R.T.s Gary Portell, Susan Frazier, Rebecca Trunnell-Hyman.





Residents' Farewell 1984



MIR Calendar of Events



October 7-12, 1984

AMERICAN SOCIETY FOR
THERAPEUTIC RADIOLOGY
AND ONCOLOGY
Washington, D.C.

October 8, 1984

CITY WIDE RADIOLOGY
CONFERENCE
Scarpellino Auditorium
Mallinckrodt Institute, 5:30 p.m.

October 18, 1984

4TH DISTRICT MSRT
St. Luke's Hospital West,
7:30 p.m.

October 23, 1984

CARMAN LECTURE
St. Louis Metropolitan
Medical Society, 6:00 p.m.

November 9, 1984

ONCOLOGY UPDATE SEMINAR
St. Luke's Hospital West

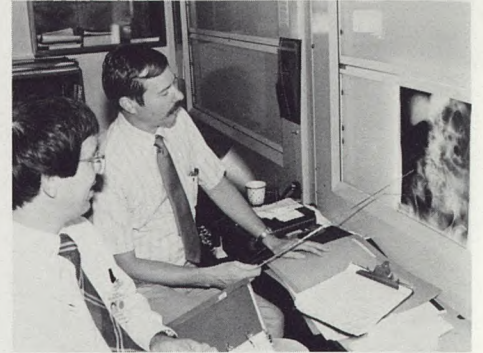
November 12, 1984

CITY WIDE RADIOLOGY
CONFERENCE
Scarpellino Auditorium
Mallinckrodt Institute, 5:30 p.m.

November 25-30, 1984

RADIOLOGICAL SOCIETY
OF NORTH AMERICA
Washington, D.C.





The Teaching Commitment

**MALLINCKRODT
INSTITUTE
OF RADIOLOGY**
AT WASHINGTON UNIVERSITY MEDICAL CENTER

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FOCAL
SPOT

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