Bridging the Gap
Between the Technical and Clinical
Mallinckrodt's new Mammography Mobile. Story on page 18.
PARTNERS ON-LINE
Optimist R. Gilbert "Gil" Jost, M.D., and realist Rex L. Hill, co-chiefs of MIR's Computer Section, combine differing approaches to help Mallinckrodt access the future.

THE NASA-MIR CONNECTION
Michael Vannier, M.D., and NASA scientists continue their important collaboration, developing down-to-earth applications for space technology through the enhancement of nuclear magnetic resonance images.

DRIVING AWAY BREAST CANCER
Mallinckrodt goes on the road to combat breast cancer, bringing the latest x-ray and film processing equipment directly to the patient with an innovative mobile mammography van.

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ON THE COVER:
The different styles and complementary skills of R. Gilbert "Gil" Jost, M.D., and Rex L. Hill, joint chiefs of Mallinckrodt's Computer Section, keep MIR at the forefront of computer applications in radiology. Photograph © 1986 by Daniel J. DiPlacido.
Siegel Appointed to ACR Program Post

Barry A. Siegel, M.D., professor of radiology and medicine and director of the Division of Nuclear Medicine, was recently appointed associate editor of the American College of Radiology’s highly successful Professional Self-Evaluation and Continuing Education Program.

Launched as a pilot project in the late sixties under the direction of Elias G. Theros, M.D., the program filled an important evaluative need, enabling practitioners to keep pace with rapid advancements and to maintain basic knowledge and skills.

“There needed to be a mechanism for radiologists to test their skills using an examination format on a home-study basis,” says Siegel. The format developed by the program provides an initial case-based, multiple-choice test; supplies both score breakdowns and feedback on performance relative to a variety of peer groups; and discusses in detail the diagnostic pathways that lead to the correct answers.

The package consists of a computer-scored test booklet, individual results and a syllabus. “The syllabi provide more than just the answers to the questions,” says Siegel. “They’re really cutting edge and up to date.” The syllabi thus serve as an invaluable information source, says Siegel, “because the format is so much like what radiologists actually do in their reading rooms.”

The initial exam and syllabus on chest disease proved so successful, says Siegel, that “multiple other subcommittees were formed to generate similar programs for each major division of radiology.” Currently, the series comprises 23 tests and syllabi, with an average of three new volumes released annually.

Siegel became involved in the program early on, in 1971, serving as one of the authors of the first nuclear radiology exam and syllabus, which was published in 1974. As chairman of the second nuclear radiology subcommittee, Siegel then worked as editor of the syllabus published in 1978. He again contributed to the 1983 nuclear radiology volume and currently sits on the subcommittee developing the fourth exam.

With Editor-in-Chief Theros and fellow Associate Editor John H. Harris, Jr., M.D., Siegel will help direct the program generally, in his new position as associate editor.

“Our responsibilities are to select the subcommittees and guide the development of the tests,” says Siegel. “Then, as manuscripts come in, we serve as final editors.

Although the work is time consuming, I love it. I consider my involvement with the nuclear radiology syllabus and the program one of my most important academic contributions. The response and the educational vehicle itself have been so uniformly good that it has been personally very gratifying.”

In addition to his work with the American College of Radiology program, Siegel is involved with a number of other self-evaluation projects. He was a member of the nuclear medicine subcommittee that recently developed the American College of Physicians Medical Knowledge Self-Assessment Program VII and also serves as co-chairman of the Society of Nuclear Medicine Self-Assessment Program.

Given his extensive involvement in developing these programs, Siegel concludes with a smile, “You might say I’m Doctor Self-Assessment.”

Dye Wins ’86 Wilson Award

Daniel M. Dye, M.D., was honored with the 1986 Hugh M. Wilson Award at the Senior Program at the Chase Hotel, May 16. Established in 1968, the award commends a graduating medical student “for meritorious achievement in radiology.”

Nominated by Michael W. Vannier, M.D., associate professor of radiology, Dye was cited for his “remark-
able intellect and excellent research background.” Dye’s extensive computer experience particularly distinguished him, says Vannier, enabling him to make an unusually significant impact as a medical student.

“Dan was a medical student on paper,” says Vannier, “but he was far more than that in terms of knowledge and motivation—he was a collaborator. I’m sure we’ve taught him some things, too, but we’ve learned as much from him.”

In his letter of nomination, Vannier further detailed Dye’s contributions. “With minimal supervision,” Vannier wrote, “Dan has been able to take the mathematical methods developed in our laboratory for three-dimensional surface reconstruction imaging and improve them significantly. As a result of his previous experience with computer methods, Dan was able to independently develop state-of-the-art imaging software for three-dimensional display of CT scans after a brief orientation to our system and introduction to the methods involved.

“In my experience,” concluded Vannier, “this is truly remarkable for a medical student.”

A man of as many interests as talents, Dye will serve his residency in psychiatry at Washington University Medical Center. Given his continued proximity, Vannier expresses hope that their collaboration will not end with Dye’s graduation. “I hope he’ll come back,” says Vannier, “so we can work on some projects together in the future.”

Gary Brink, R.T.B.S., FASRT

Gary Brink, R.T.B.S., FASRT, chief technologist and assistant director of education, has assumed new responsibilities as technical coordinator of the institute’s Mammography Outreach program. Technical Supervisor Mike Albertina, R.T.B.S., has been named chief technologist in charge of technical operations. Filling the post left by Albertina, Tim McNabb, R.T., has been named technical supervisor.

As Mammography Outreach coordinator, Brink manages the marketing of the Mallinckrodt Mammography Mobile and directs planning and negotiations with local employers, community organizations and educational institutions that serve as sites for the Mobile. He has also helped design the van itself.

Brink joined the institute staff in 1967 and was promoted several times before being appointed to his current position. Active in many professional organizations, Brink in 1979 was the youngest technologist named a fellow in the American Society of Radiologic Technologists. He received his bachelor’s degree in business administration from Washington University. Brink will continue to oversee supervisory and support staff in Patient Scheduling, the Film Library and the Film Warehouse and serve as assistant director and administrative faculty member in the School of Radiologic Technology.

As chief technologist of technical operations, Albertina maintains quality control, develops quality assurance programs and monitors patient flow and technical staffing in the Division of Diagnostic Radiology.

For the last 3 years, Albertina has served as technical supervisor in MR Imaging and Special Procedures. During 1982, he headed the Department of Radiology at Memorial Hospital, a 400-bed medical facility in Belleville, Illinois. From 1971 to 1982, Albertina served on the Mallinckrodt technical staff as a technologist, assistant supervisor and then supervisor in Special Procedures. He returned to Mallinckrodt in 1982 from Belleville because of his interest in new imaging technology and the institute’s newly purchased MR scanner. He is currently pursuing part-time studies for his master’s degree in marketing at St. Louis University.

Like Brink and Albertina, McNabb is a graduate (’83) of the institute’s School of Radiologic Technology. On his graduation, Mallinckrodt presented to McNabb the Special Recognition Award for excellence in personal achievement.

Mammography Mobile Successfully Launched

Breast cancer screening hit the road in St. Louis on August 11 when Mallinckrodt launched its new Mammography Mobile. The press conference inaugurating the state-of-the-art van took place at Boatmen’s Tower downtown.

Donald N. Brandin, chairman of the board and chief executive officer of Boatmen’s Bancshares, Inc.,...
availability.

The kick-off event was attended by the media and a number of prominent businessmen, physicians and special guests. After introductory remarks by Brandin and Evens, a van tour was conducted. A press conference was then held with Mallinckrodt radiologists to answer any questions about the Mammography Mobile and breast cancer generally.

For more information on this innovative community outreach program, see the story on page 18.

Raichle Chairs Princeton Conference

Mallinckrodt Institute's Division of Radiation Sciences served as host to the important Princeton Conference on Cerebrovascular Disease, held at St. Louis Union Station, March 9-13. Marcus E. Raichle, M.D., professor of neurology and radiology, chaired the conference, which was attended by MIR staff members William J. Powers, M.D., assistant professor of radiology; Michel M. Ter-Pogossian, Ph.D., director of the Division of Radiation Sciences; and Peter Fox, M.D., research assistant professor of radiology.

The invitation-only Princeton Conference, so named for the gathering's original host, is the most prestigious of cerebrovascular disease conferences. Limited to 75 people, the meeting draws conferees from around the globe for discussions of the latest basic science and clinical science research on cerebrovascular disease. Because of its intentionally small size, the conference promotes active discussion and limits the number of formal talks.

Held biennially, the conference is funded by the National Institute of Neurological Communicative Disorders and Stroke (NINCDS) of the National Institutes of Health. This year's conference also received support from the Monsanto Chemical Company.

Chairmanship of the Princeton Conference rotates. Raichle was chosen by the preceding three chairmen and thus will have a hand in selecting his successors. Raichle also serves as co-editor, with Powers, of the conference proceedings, to be published by Raven Press.

AJR Selects New Editors

Three MIR staff members have been appointed assistant editors of the American Journal of Roentgenology. AJR Editor-in-Chief Robert N. Berk selected 19 new assistant editors, including Ronald G. Evens, M.D., director of MIR, for socioeconomic; Stuart S. Sagel, M.D., director of chest radiology, for pulmonary radiology; and Michel M. Ter-Pogossian, Ph.D., director of the Division of Radiation Sciences, for radiation physics.

In announcing the selections, Berk stated that the assistant editors will serve as chief advisors to and work closely with the editor in all matters related to their area of authority.

"These people were selected," Berk wrote, "because of their outstanding contributions to their subspecialty, their extraordinary intellectual talent, and their proved dedication to excellence in the radiologic sciences."

The appointments were announced in an article, with accompanying photographs, in the June issue of AJR.

MRI Group Hosts First Regional Conference

The Midwest Clinical Magnetic Resonance Imaging Conference, jointly presented by MIR's Magnetic Resonance Imaging Group and Washington University School of Medicine's Office of Continuing Education, will be held at the Omni International Hotel in St. Louis Union Station, September 19-20.

Suitable for all physicians with an interest in magnetic resonance imaging, the conference will be the first in the Midwest to focus specifically on clinical applications, emphasizing comparison with other accepted imaging methods. Its purpose is to help participants develop a practical appreciation of magnetic resonance imaging's basic principles and currently accepted uses for the brain, spine, body and extremities. Clinicians, faced with a decision among several imaging tests for a given problem, can expect to become more aware of magnetic resonance imaging's relative merits. Radiologists, confronted with consultation and interpretive questions regarding specific magnetic resonance imaging applications, should expect to receive useful direction.

All physicians who participate will receive 14.5 credit hours in Category 1 of the Physician's Recognition Award of the AMA. The course fee is $175.00.

William A. Murphy, Jr., M.D., MIR professor of radiology, will direct the conference. Course faculty includes Dennis M. Balfe,
M.D., MIR assistant professor of radiology; Thomas W. Dixon, Ph.D., MIR assistant professor of radiation sciences; Ronald G. Evens, M.D., professor of radiology and director of MIR; Harvey S. Glazer, M.D., MIR assistant professor of radiology; Suzanne Gronemeyer, Ph.D., magnetic resonance applications scientist, Siemens Medical Systems; Fernando R. Gutierrez, M.D., MIR assistant professor of radiology; Jay P. Heiken, M.D., MIR assistant professor of radiology; Fred J. Hodges, III, M.D., MIR professor of radiology; Joseph K.T. Lee, M.D., MIR professor of radiology; David Ling, M.D., MIR assistant professor of radiology; Ronald Peshock, M.D., cardiac radiologist, Nuclear Magnetic Resonance Imaging Center, Dallas; William R. Reinus, M.D., MIR assistant professor of radiology; Klaus Sar-M.D., MIR assistant professor of radiology; Yasutaka Togawa, M.D., MIR associate professor of radiology; William G. Totty, M.D., MIR associate professor of radiology; and Meredith A. Weinstein, M.D., neuroradiologist, Cleveland Clinic, Cleveland.

For registration information, call (314) 362-2911.

**Senturia Honored for Third Time**

Hyman R. Senturia, M.D., professor emeritus of clinical radiology, was named "Teacher of the Year" for 1986 from the part-time clinical faculty. Selected by the graduates of the Washington University School of Medicine from members of the preclinical, clinical and part-time clinical faculty, the honorees are chosen in recognition of pedagogical excellence.

Now a three-time award-winner, Senturia was honored first in 1972 and again in 1979. The 1986 laurel marks his second selection as recipient of The Sydney S. Pearl, M.D., '32 Award for Inspirational Teaching.

Ronald G. Evens, M.D., director of MIR, noted the rarity of Senturia's achievement in a congratulatory letter. "Few teachers get honored by students once in a lifetime," wrote Evens, "and this is your third time. The Department of Radiology is very proud of your accomplishments."

A former student of Senturia's, Dixie Aronberg, M.D., associate professor of radiology, enthusiastically endorses the selection. "He's a fine teacher, an excellent radiologist and a really fine person."

Aronberg, herself a former "Teacher of the Year," credits Senturia as "the one who turned me on to radiology." In describing the qualities that distinguish Senturia as a teacher, Aronberg notes his extraordinary skill as a radiologist you know when you've become expert. He's willing to go back to the basics and point out what's there for each group of students over and over again."

**Radiation Oncology Sponsors Hyperthermia Symposium**

The Division of Radiation Oncology holds its Second Annual Hyperthermia Symposium and Workshop in Scarpepino Auditorium, September 18-20. The symposium combines comprehensive didactic lectures with practical sessions in the use of local, interstitial and deep hyperthermia in treating cancers.

Lectures cover the basic biology and physics of hyperthermia, thermal dose and thermometry principles and techniques for patient treatment, providing current information on clinical results with local, regional and whole body techniques. Workshops give participants the opportunity to observe actual hyperthermia techniques used on patients with a variety of methods and equipment.

Although the symposium and workshop are already sold out, morning lecture sessions are still available at $175.00 for physicians and $100.00 for residents, nurses and technologists.

The symposium features an impressive list of speakers, gathering together numerous experts in the field. Guest faculty includes Joan Bull, M.D.; Peter M. Corry, Ph.D.; Mark W. Dewhirst, D.V.M., Ph.D.; Peter Fessenden, Ph.D.; and Chang W. Song, Ph.D. Bahman Emami, M.D., MIS associate professor of radiology and clinical director of the Hyperthermia Program, chairs the symposium, and Gilbert Nussbaum, Ph.D., MIS associate professor of physics in radiology, serves as workshop chairman. Host faculty also includes Robert Kuske, M.D., instructor in radiology; Carlos A. Perez, M.D., professor of radiology and director of the Division of Radiation Oncology; Miljenko V. Pljevich, M.D., associate professor of radiology; and Joseph Roti Roti, Ph.D., associate professor of cancer biology in radiology.

For more information on the symposium and workshop, call Connie Huycke at (314) 361-8500.
Esquire magazine notified Michael W. Vannier, M.D., associate professor of radiology, of his nomination for inclusion in the 1986 Esquire Register. The Register, according to Esquire, "honors a select number of American men and women under 40 who have made significant contributions to their fields." The magazine's final selections will appear in a special December issue. Although Vannier modestly says, "I'm always surprised," he was similarly cited for his achievements in a St. Louis magazine profile last year.

Local concern over the dangers of radioactivity stemming from the Chernobyl nuclear accident in the U.S.S.R. was allayed somewhat by Barry Siegel, M.D., professor of radiology and medicine and director of the Division of Nuclear Medicine. In a KSDK-TV news report by Al Naipo on May 6, Siegel reaffirmed federal public health agency assurances that the administration of thyroid-blocking agents to American citizens was an unnecessary protective step. In discussing the radiation detected in the U.S. atmosphere and the radioactive iodine found in Washington and Missouri water, Siegel explained that these radiation levels were several orders of magnitude below those that predictably cause harmful effects.

A controversial report in a recent issue of the New England Journal of Medicine asserting that "science is losing the war against cancer" drew a pointed response from Carlos A. Perez, M.D., professor of radiology and director of the Division of Radiation Oncology. Citing statistics that show steadily improving treatment techniques and survival rates for cancer patients, Perez said that science is winning the war, adding that "something still needs to be done about those who are dying." Perez' comments appeared in a front-page story in the May 9 St. Louis Globe-Democrat and in a KSDK-TV interview with Rick Edlund the following day.

Video and radio reports on one of MIR's most unusual and celebrated patients—Harpo, an ailing St. Louis Zoo cheetah—appeared nationwide during the last week of April. The news reports detailed MIR's work in pinpointing the cause of Harpo's abnormal gait and in determining subsequent treatment. An interview with musculoskeletal specialist Louis A. Gilula, M.D., co-chief of the Musculoskeletal Section, who serves as a Zoo consultant, was prominently featured in the radio spots. Performing the diagnostic procedures, which included a myelogram and CT scan, was neuroradiologist Mokhtar Gado, M.D., professor of radiology. In addition to the electronic media coverage—distributed to approximately 90 television news stations and network affiliates and 65 radio news organizations—articles about Harpo and MIR appeared in a variety of newspapers in both late 1985 and early 1986.
The Cancer Information Center's first annual "Giving Day" received prominent coverage on the third page of the April 23 St. Louis Post-Dispatch. During this special day promoting the Center's free services for cancer patients, their families and loved ones and all those concerned with cancer, Center Coordinator Lois Howland, R.N., and several volunteers presented gifts of flowers to Center visitors and patients at Barnes and Mallinckrodt Institute.

In his continuing effort to promote licensing standards for x-ray technicians in Missouri, Ronald G. Evens, M.D., director of MIR, appeared with KPLR-TV reporter John Schieszer in a June 18 story on this important issue. Criticizing medical offices in which "anyone can give an x-ray," Evens expressed concern over the potential harm such lax practices pose to both the patient and the unlicensed technician. He recommended that the public use facilities such as MIR, where a trained and licensed staff ensures proper technique and protection.

The Every Other Weekly focused its spotlight on a trio of performing MIR staff members in their June 25 issue. The "Vignette" took note of the singing talents of Gilbert H. Nussbaum, Ph.D., medical physicist; William Conway, M.D., Ph.D., resident radiologist; and Patrick Thomas, M.D., radiation oncologist. These radiological experts with rhythm perform with the 80-member Daniel Boone Chorus, a St. Charles-based barbershop chorus, founded in 1962, which has won local and national recognition in various competitions. The MIR staff members recently participated in the Chorus' annual performance—"Old-Fashioned Love, Faith and Songs"—at the Scottish Rite Cathedral on May 10. For further information on the Chorus, please contact Dr. Nussbaum at 362-2633.

MIR’s "barbershop trio"—William Conway, M.D., Ph.D., Patrick Thomas, M.D., and Gilbert H. Nussbaum, Ph.D.
On a Friday evening in 1982, R. Gilbert “Gil” Jost, M.D., and Rex L. Hill, joint chiefs of Mallinckrodt’s Computer Section, were installing a new film library system. They chose to work at night to minimize disruption of the daytime schedule. But at 2:00 Saturday morning, Hill found a major flaw in one of the computer programs. Exasperated, Hill paused at his work. Whereupon, Jost, eternally optimistic, patted him on the back and said, “Let’s go on. We can fix it.” Working straight through the weekend without sleep, Hill and Jost found the mistake, and by the rush of Monday morning, the system was working smoothly.

Jost the optimist and Hill the realist have been Mallinckrodt’s partners-in-computer-technology for 13 years, bringing their different styles and talents to the creation of MIR’s computing facility. Jost, with his crisply pressed lab coat, neatly trimmed hair and precisely timed gestures, is always caught in the rapture of a new idea. Hill, on the other hand, with his loosely tucked shirt, corduroys, worn hiking boots and tousled hair, prefers translating ideas into tangible results.

“We’re opposites to a degree,” says Jost, “and I suppose that could cause some friction, but we’re both people who get along easily with others. It takes a cross section of interests to build a system such as ours. In many ways, Rex and I, working together, have built a bridge between the technical and clinical.”

In the beginning, we focused on the one thing that ties the entire institute together: the patient.”

network—a radical departure for a radiology department—was “a bit of Gil and Rex philosophy,” says Hill. “We didn’t want to get caught in the trap of having to buy bigger and bigger computers. So we decided to drive our systems with multiple small machines that were linked together.” Both the information and the programs managing the flow of information are many times more elaborate than those found at other radiological centers. All of which is the result of a series of smart but conservative moves.

Jost and Hill began by studying what others were doing. “We were faced with finding a computer solution for managing the entire institute,” says Jost. “We traveled all over the country and found some very good solutions for the scheduling of patients and for diagnostic reporting. But there wasn’t a system that could solve all the problems of a department.”

One reporting system we investigated,” says Hill, “gave radiologists a number of on-line menus to select from. Each menu had choices, so a radiologist could punch in the anatomical part being examined, the type of disease and so on. It seemed very impressive, but when we posed questions about the system’s working ability, several radiologists said it didn’t work and they didn’t use it.”

In the end, both Jost and Hill agreed that among all of the existing systems and those being developed by computer manufacturers, not one could manage the variety of situations and tasks confronting the institute. Jost and Hill decided to develop a system of their own.

First, they concentrated on a foundation for the future. “We wanted a solution that would work in the real world of a radiology department, so we focused on the one element that ties everything together: the patient,” says Hill. “Our first effort was to design a system that would be used in the registration of patients.”

They started at ground zero, doing their own research and development. Hill remembers the times when he or a Computer Sec-
tion staff member went to work in another area of the institute, performing one specific task over and over again for weeks on end, to see for themselves how a computer could best execute the task. Hill and Jost sowed the seeds of their plan with scrupulous care.

Operations began in May 1975 with one computer, a PDP11/40 nicknamed "Tom," on the then-barren 12th floor. In the intervening 12 years, the Jost and Hill duo has designed and built a network that permeates the institute, handling billing, dispensing patient reports, smoothing out patient scheduling, locating x-ray films and monitoring equipment.

"Our first module gathered basic biographical data about the patient," says Jost. "Because anything modular is made of pieces that fit together, we added other modules, one by one, to concentrate on different tasks. These tasks included diagnostic reporting, the tracking of film jackets and gaining access to management-oriented information on the performance of our clinical and support areas. At the time we were developing this approach, there were only three or four major centers beginning to do the same thing. The idea was certainly not universal."

The concept also had its critics. There were those who believed that Mallinckrodt's computer system should be based on the technology and approaches prevalent at the time. However, Jost felt that new approaches were called for. Medical Systems Group Manager Richard Corley, of Digital Equipment Corporation, says, "There are several physicians who have the conceptual ability to understand computer science, but Dr. Jost can also bring it down to practical applications. That is a nice combination of skills." It was this combination that drove Jost and Hill to their success.

How successful have they been? Successful enough to have designed an administrative computer system experts consider one of the medical imaging world's best, though Mallinckrodt still uses much of the original hardware in its greatly expanded network.

"The tracking system is a unique feature at Mallinckrodt," says Hill. "At any moment in time, we can track any of the major events related to the service provided to any patient. We know when the patient arrives and leaves the treatment area; what the exam codes (the kind of exam given to the patient) are; if and when films are sent from the warehouse to the floor; when the films arrive from the warehouse; when a diagnostic report is completed; who performs the
exam; and if extra film—which is a very big budget item in radiology—is used. We also know when a treatment room goes out of service or when specific equipment breaks down.

The tracking of patient-related events also allows Mallinckrodt's administrative staff to pinpoint potentially larger problems such as the ineffective use of x-ray equipment that may reveal inadequate technical training, a defective batch of film that could then be sent back to the manufacturer or imaging equipment that needs to be repaired or replaced.

The system also measurably increases the productivity of support staff at MIR. One example is a file containing the records of each patient. Clerks always stood at this awkward structure, waiting to file new reports. But because still newer reports arrived constantly every day, the clerks were always behind in filing, and the most recent reports sat in boxes on the floor. Since a physician wants to know the diagnosis of his patient right away, the newest reports in the boxes were the ones most sought after. The end result was a mass of bodies foraging through these boxes and frustrated clerks not able to file reports where they belonged.

Since the advent of computers, the whole process works more efficiently. "With today's system for filing and distributing reports, we don't need that bin and that tremendous amount of paper floating around. The computer stores the reports and frees the staff to answer phones, send out reports, schedule patients and tend to other things. And they do this with a smile," says Hill.

Patients smile, too. The most admired feature of Mallinckrodt's system, says Ronald M. Arenson, M.D., associate chairman of the Department of Radiology, University of Pennsylvania, is its ability to monitor patients in real time. When patients arrive for examinations, their names and times of arrival are clocked into a computer. The time of the exam and the time of departure are also entered. Thus a supervisor can consult a terminal to find out exactly where patients are and how long they have been waiting. Previously, a patient spent an average of 1 hour and 20 minutes in Mallinckrodt. The average time is now 20 minutes, a savings of 300,000 patient-hours per year.

Hill believes this kind of computer application would not have been possible had it not been for the progressive thinking of Ronald G. Evens, M.D., director of Mallinckrodt. With Evens at the helm, the Computer Section has been able to expand without the restrictive binds of a tight budget or the need to rely totally on grant support.

Funding has not only gone to computers and related equipment. It has also been used to bring on new specialists, such as programmers Allen Reuter and Steve Rodewald, who both Jost and Hill say have provided "extraordinary collaboration" in the development of specialized computer programs. Other staff members include a third programmer, a data manager, a medical transcriptionist/coder, three part-time computer operators and visiting engineering or medical students who provide assistance in special projects. Yet, because the staff is small com-
pared to staffs at other centers, each member wears more than one hat. Even the Computer Section secretary can solder wires in the repair of cables crucial to the smooth operation of computers. "The computer group here has developed a very good system—it's very highly thought of—in large measure because of the quality of the team," says Jost.

Meanwhile, the seeds of Jost's and Hill's modular wizardry continue to bear fruit. On the horizon are significant additions to Mallinckrodt's administrative computer system.

In collaboration with the Harris/Lanier Corporation, Mallinckrodt will soon have a centralized dictating capability and will work with the manufacturers to develop new features for their system. Using digital voice recording, the Lanier Reporting System allows radiologists to dictate reports into any of a number of sophisticated phones that communicate with a computer. The computer converts the radiologist's voice to digital numbers, stores this information, then signals a transcriptionist to transcribe a dictation. To transcribe this dictation, the transcriptionist need only punch digital numbers, stores this information, then signals a transcriptionist to transcribe a dictation. To transcribe this dictation, the transcriptionist need only punch in a special code and the digital voice becomes human again so that a written report can be produced. At the same time, the computer sends another signal, alerting the radiologist that the report is ready for review. By punching in a signature code through another sophisticated computer program, the radiologist approves the report and sends it quickly on to the referring physician. The result, says Hill, is a "more reliable and totally systematic method for the dictation and handling of reports."

The Mallinckrodt computer network was a factor in Digital Equipment Corporation's decision in 1985 to award a $15 million equipment grant to Washington University for a campuswide computer network. "Dr. Jost had demonstrated the capability to produce very complex systems," says Corley. "And he showed the ability to live up to his ongoing commitments."

With Jerome R. Cox, Jr., Ph.D., professor of computer science, Jost and Hill are designing a series of computers and workstations that will link the whole medical center to the Hilltop campus by 1988, making it easier for researchers in both locations to collaborate. Much of the network is already in place and can distribute not only data and graphics but also images such as digitized maps, photographs and x-ray images.

"When all this works, it will create dramatic changes in the way we practice medicine, and it will ultimately reduce costs," says Jost. "But it is a big challenge. Each part of the puzzle is on the cutting edge of technology—computer networks that can handle the traffic of such large pictures, the electronic storage of images, special screens to view them, which are still very expensive.

"It will take another decade or so before the problems are worked out and the technology can find its way into hospitals throughout the community. Over the next year or two, we will experiment with this type of technology—it’s the role of a place like Mallinckrodt to lead the way."
It is early morning at Mallinckrodt, and Rex Hill's head is jutting into a hole in the ceiling. Hill, co-chief of MIR's Computer Section, is trying to locate wires that are "dead," or unconnected to a terminal. Because cables connecting remote terminals to the heart of the section's network lay across ceiling tiles and run up and down the lengths of many buildings, it's not unusual to find Hill climbing into ceilings or crawling into crevices between walls.

A hands-on, feet-on-the-ground sort, Hill believes that knowing everything about your equipment is central to making things work. His broad knowledge encompasses hardware, systems software and software applications, ranging from the general—the application of computers in other radiological and medical centers—to the very specific—the inner workings of a computer terminal. Hill continues to add new data to that bank of knowledge, keeping pace with the fast-changing computer industry by filling his office to overflowing with assorted bundles of computing manuals, equipment brochures and high-tech talking magazines.

"Rex is a very practical person who pays a great deal of attention to detail," says long-time collaborator R. Gilbert "Gil" Jost, M.D. "He sticks with something until all the problems are worked out."

Even as an undergraduate student at the University of Cincinnati, Hill found ways to satisfy his interest in how machinery operates. He worked odd jobs in a machine tool factory and as an x-ray technologist to support himself while earning his bachelor's degree in electrical engineering.

Paradoxically, Hill says, "I never took a computer programming course in all my years as an undergraduate or as a graduate in electrical engineering. I think all the classes in the world don't mean anything unless the opportunity to practice is there. I learned about computers by working with them."

Hill's first exposure to computers happened "accidentally," when he was pursuing his master's degree at the University of Cincinnati. Assigned to a faculty advisor who taught engineering and computer science, Hill grew so interested in what computers could accomplish that he taught himself how to program during a Christmas break. Wanting to see his knowledge bear fruit, he used this newfound skill to gain work as a computer programming consultant for various industries in the Cincinnati area. Hill also landed a teaching assistantship that gave him the opportunity to teach a course on analog computers (which are based on electrical analogs and differential equations).

When Hill chose the university where he would pursue doctoral studies in engineering, his decision was appropriately based on things mechanical—in this case a machine that didn't work. He says, "I had to choose between the two schools I liked the most—Washington University and the University of Arizona. Both of them offered very good teaching assistantships, but my car, on its last legs, determined where I ended up. Because of the shorter distance between Cincinnati and St. Louis, I chose Washington University."

A graduate student interested in new applications of computers, Hill one day wandered into the university's Biomedical Computer Laboratory, which was then run by Jerome R. Cox, Jr., Ph.D. Hill was again looking for the opportunity to work on practical applications of his computer knowledge. "The Biomedical Computer Laboratory struck me as a very exciting place to be," says Hill. "I knew that it was a very vital place for the study of computers in medicine, and this was in a time when medicine still believed that computers were strange things."

He eventually gained a research assistantship at the laboratory, which led to investigations of computer applications in nuclear medicine and imaging instruments used in the radiological subspecialty with the director of Mallinckrodt, Ronald G. Evens, M.D., who was then a fellow in nuclear medicine. Hill's work with Evens led to his hiring at MIR in 1973.

The success of MIR's computer system attests to Hill's expertise and persistence. "I get into a lot of neat ideas," says Jost, "get enthused about them and then move on. Rex sticks with them and sees that they get done."

"From the very start, he was a practical, commonsense guy who didn't get distracted by the little things but kept the big picture in mind. It's to Rex's credit..."
PARTNERS-ON-LINE

that we've maintained our original vision and accomplished what we wanted.’’

Describing the nature of his 13-year-old working relationship with Jost, Hill says, “Gil is a man of ideas. He has more ideas than there are people to accomplish them. Frankly, without his motivation, we might be sitting here with one terminal. And if I had my way, that terminal would be working all the time.’’

Jost, the “man of ideas,” lauds Hill as “a careful, persistent, nuts-and-bolts person who gets things done. He is successful largely because he listens to and relates well to all of the various groups in the institute.

“To put together a system such as we have, it has to work in a lot of different environments,” says Jost. “Being sensitive to the needs of the people in the departments is thus very important. Rex knows those people—he takes their comments constructively and translates them into results that work well for everyone.’’

Making things work is not all that Hill is made of, however. Despite his practical nature, he takes time occasionally to reflect on what computers have meant—and will mean—to mankind.

“What’s so amazing about the computer revolution is the elemental kind of economics behind it,’’ says Hill. “At its simplest level, the source of the silicon used to make the all-powerful circuit chip is sand—the sand on the beach, the sand that lies in heaps and piles all over the world.

“When you compare the soaring costs of raw materials like oil and minerals, and you consider what computers have been able to accomplish, this is a truly exciting time in man's evolution.’’}
applications in radiology, to bring computers to Mallinckrodt. The resulting administrative computer system is far from mundane and has earned its architects an international reputation. "Gil Jost is one of a very small group of people who are considered the leaders in computers in radiology," says Ronald L. Arenson, M.D., associate chairman of the Department of Radiology, University of Pennsylvania. Arenson and Jost sit on American College of Radiology committees and the Radiology Information Systems Consortium.

Jost’s first exposure to computers was at Harvard University, from which he graduated magna cum laude in 1964. There he studied liberal arts, initially intending to major in American history. Somehow, he says, he became interested in brain function and found himself doing research at Harvard Medical School for an undergraduate thesis. He also took a few computer courses, though he had no intention of making computer science part of his career. Neither did he intend to become a physician. "During a summer vacation, I visited someone in the hospital," he recalls. "After riding in an elevator with sick people and tired-looking doctors, I turned to a friend and said, ‘That’s one career decision I’ve made. I don’t want to be a physician.’"

Medical school seemed more appealing 2 or 3 years later. Influenced by a roommate who wanted to be a doctor and by a desire to continue his neurophysiology research, Jost entered Yale University School of Medicine. It was there, in the late sixties, that Jost first suggested to several clinicians that computers might be useful in medicine. "They threw me out of their offices (in the late sixties). People thought machines would get in the way."

Still determined to learn more about computers, he took a year off from medical school and enrolled in Yale’s engineering school. "It was rather a bold move," he says, "because the people who admit you to internships couldn’t care less about computers and are suspicious of someone going off and doing that sort of thing."

As it turned out, the decision did not deprive Jost of an internship. Instead, it paved the way for another decision, one that would bring Jost to MIR and MIR to the forefront of computer technology.

With good recommendations from Yale, he went on to study internal medicine at the Cleveland Metropolitan Hospital in 1969. Jost would have become a cardiologist or pulmonary specialist but for the interruption of military service. He fulfilled this obligation with two years in the Public Health Service at the National Institutes of Health in Bethesda, Maryland, where he was in charge of computers in the Laboratory of Neural Control.

It was during this stint away from clinical medicine that Jost first suggested to several clinicians that computers might be useful in medicine. "They threw me out of their offices," he says. "Medicine was steeped in the tradition of patient care and interactions with patients. People thought that machines would get in the way."

Still determined to learn more about computers, he took a year off from medical school and enrolled in Yale’s engineering school. "It was rather a bold move," he says, "because the people who admit you to internships couldn’t care less about computers and are suspicious of someone going off and doing that sort of thing."

As it turned out, the decision did not deprive Jost of an internship. Instead, it paved the way for another decision, one that would bring Jost to MIR and MIR to the forefront of computer technology.

When Jost applied for a residency at Mallinckrodt, newly appointed Chairman Ronald G. Evens, M.D., was quick to appreciate the value of a bridge builder. "Here was a fellow who had high marks academically at the best schools plus two years of training in computer use in medicine," says Evens. "He was a superb candidate for us because Washington University was already committed to the use of computers, having established the Biomedical Computer Laboratory in the sixties."

After his residency, Jost accepted a position in chest radiology, rising from instructor in 1975 to full professor in 1985. He became diagnostic radiologist-in-chief of Barnes Hospital in 1986.

Still looking to the future, Jost intends to keep his foot on the accelerator. "I want to make a big impact in a very short period of time," he says. "I believe that medicine will undergo profound changes over the next decade, and it’s just darned exciting to be in the middle of it."

"Economic pressures will force us to be more efficient, and the technical explosion will force us to do things differently. I believe that technology is the key to both reducing costs and improving the quality of care. There’s going to be a big explosion in this specialty, and I want it to happen here first."
At first glance, the three nuclear magnetic resonance (NMR) images seem to be good black-and-white pictures of a human brain. But, under the expert scrutiny of Michael W. Vannier, M.D., associate professor of radiology at Mallinckrodt Institute of Radiology, their limitations become apparent. "The definition at the edges of the picture is indistinct, the neck is too dark, the center of the brain is bright while the periphery is less so and there is a lot of 'noise' associated with the image," he says.

For the past year, Vannier has been working with NASA scientists from the Kennedy Space Center and the National Space Technology Laboratories (NSTL) on a 3-year "Technology Utilization Project" designed to enhance NMR images like these and make them more useful in medical diagnosis. Their tool is Earth Resources Laboratory Applications Software (ELAS), a set of 300 highly sophisticated computer software programs originally developed by NASA to analyze satellite data and integrate it into colorful composite images.

Already, the NASA-MIR collaboration has yielded tangible results. Those images of the brain, for instance, have improved dramatically. The bottom is brighter, the "noise" is missing, tissues have been color coded and the three have been combined into one vivid and colorful composite. The final image is intended, says Vannier, "to convey more useful diagnostic information collected by the MR scanner than unaided humans could otherwise perceive."

This work is also garnering some national attention. A 3-minute videotape, prepared by NASA to describe the project, has been distributed as part of a 14-minute program called "The Aeronautics and Space Report" to 600 television stations nationwide. This tape will also be used internally by NASA and disseminated worldwide through the United States Information Agency (USIA).

The project began when Vannier, a former NASA engineer, recognized the similarities between satellite photographs and NMR scans, both of which have multi-spectral characteristics. He contacted Robert Butterfield, a NASA image analysis specialist, who responded with enthusiasm to the suggestion of applying satellite technology to NMR imaging. He invited Vannier to process test data on the agency's LANDSAT computer.

NASA, which is funding the project through the Kennedy...
Space Center, was also glad to cooperate, since the 1958 National Air and Space Act that created the agency also requires NASA to disseminate technical information to the civilian sector. "They like to show that the investment this country makes in NASA is not strictly limited to space," says Vannier.

During this first year, Vannier and his NASA colleagues have concentrated on improving image quality by eliminating instrument problems. These sensor-based linearity and uniformity corrections will make the data produced more readable and useful, he says. Since MIR computers and displays were not compatible with those at NASA, the Mallinckrodt team has also needed to order equipment that would let them run ELAS programs and obtain their own results.

"Next year," says Vannier, "we're going to be busy in a lot of ways." With ELAS running at MIR, the team will be working to increase the versatility and portability of the software. They will first streamline cumbersome programs and then plan to remove elements that pertain only to satellite imaging.

By the end of the third year, he says, "we hope to end up with a product suitable for distribution to NMR users. We will validate the software on known cases here and prepare documentation so that if somebody gets a copy, they will be able to use it." MIR and NASA will cooperatively sponsor symposia in St. Louis to disseminate software information.

Although the potential long-range benefits of multispectral analysis are exciting, Vannier says, its specific applications remain to be developed. Certainly, the enhanced NMR data will add to and not simply duplicate the morphological information provided by a CT scan: the location of a mass, its size and its relation to other structures.

"We want to say something about the biological activity of that mass," he says. "Say, for instance, you use radiation on it to kill the tumor cells. The problem is that the mass will decrease but not go away. So you still have a mass, and you still can tell where it is and how big it is, but you often can't be specific about what it is likely to do in the future. We're interested in knowing the difference between live and recurrent tumor, fibrous or benign tissue."

In addition to his NASA collaboration, Vannier is also working on a project to apply CT scan and computer technology to an anthropological problem: reconstructing the three-dimensional internal appearance of rare fossils, now obscured by stone. He and Glenn Conroy, Ph.D., Washington University professor of anthropology and professor of anatomy at Washington University School of Medicine, spent 2 weeks in South Africa in July conducting initial research.

With his anthropological work, Vannier is attempting to provide new perspectives on the past. With his NASA collaboration, he hopes to provide a brighter, clearer view in the future.
"We need to get the message to women that breast cancer is still a formidable killer."

DRIVING AWAY BREAST CANCER

Mallinckrodt Mammography Goes on the Road

by Candace O’Connor

Most recreational vehicles on the road this summer will head to distant campsites and frivolous vacation fun. But the Mallinckrodt Mammography Mobile will set out in August with a list of local destinations and a deadly serious goal: the early detection of breast cancer—a major killer of women.

The sleek silver and blue-striped van, equipped with the latest x-ray and film processing equipment, will park near churches, businesses, HMOs and stores throughout the St. Louis area. Women who live or work nearby can then board the 30-foot vehicle, staffed by two female technologists, for a quick and inexpensive mammogram.

"Mallinckrodt Institute has developed this van as a public service," says Ronald G. Evens, M.D., director of MIR and Elizabeth Mallinckrodt professor and head of the Department of Radiology at Washington University School of Medicine. "We believe strongly in mammography, and we are disappointed that it is not being used by many more women."

The mammography van will be the first of its kind in this area and one of a limited number of similar vehicles around the country. Its introduction here will also signal another first—a new kind of outreach for the Mallinckrodt Institute of Radiology.

"We have never before taken an x-ray test to the community," says Evens. "But no other test in radiology—not even the chest x-ray examination—has been as successful as mammography in diagnosing disease. It has proven that it can detect cancer before a mass can be felt. When you find the cancer that early, the cure rate jumps from less than 50 percent to more than 90 percent."

Along with the van, MIR will also launch a major educational effort to instruct women about the importance of early breast cancer detection. A speakers' bureau will have experts available for public lectures, and cancer literature will be disseminated throughout the community. Annual seminars, open to the public, will deal with such topics as detection, surgery, surgical alternatives and coping with cancer.

The MIR initiative comes at a time when various groups are trying to heighten public awareness of the importance of mammography. Next April, for example, the American Cancer Society will send its own van on a U.S. tour, stopping in various cities in an effort to promote breast cancer screening.

This educational thrust is extremely important, says Geri Rothman, a breast cancer patient who has lectured and written about coping with cancer. "The whole theory today is to catch cancer early. If you do, you have a chance to live a long and healthy life with your loved ones. Mammography makes that possible."

The idea for the van began taking shape last November, at the annual meeting of the Radiological Society of North America. Among the new kinds of equipment displayed by various companies was a mobile van designed for mammography. Both Evens and Judy Destouet, M.D., associate professor of radiology and head of mammography at MIR, were intrigued by the idea.

"Mobile technology has been used for several years with other things: CT scans, magnetic resonance imaging, hypertension studies. It has finally been adapted to mammography, and it's an ideal tool for the purpose," says Destouet. "It became evident that, to reach large numbers of women economically, we would have to do something like this. This is the wave of the future."

Soon after the meeting, Evens assigned Gary Brink, chief technologist at MIR, to the project. Brink launched an intensive 3-month effort to design a customized vehicle and select equipment suppliers: Airstream ("the Cadillac of the industry," Brink says) for the coach; Siemens Medical Systems, Inc. for the latest x-ray devices; Mobil Tech, Inc. for customizing work; Eastman Kodak Co. for on-board film processing.

"I can't tell you how exciting it is to take on a project like this. You're drawing so many things together," says Brink. He faced such technical challenges as providing sufficient electrical power generation for the on-board equipment. He also decided that, unlike other mammography vans, this one should provide on-the-spot film processing. If the quality is poor, a new film can be taken immedi-
No other test in radiology has been as successful as mammography in diagnosing disease.

Brink describes how a screening examination will work: A woman boards the van and registers at a desk staffed by an x-ray technologist. Next, in one of two dressing rooms, she dons a paper gown and proceeds to a plush armchair, where she can slip on head phones and listen to and view a videotape on breast self-examination. Then she goes to an x-ray area for the mammogram, performed by a second technologist. Total time required: less than 20 minutes.

After analysis of the x-ray film by the MIR radiology staff, the test results will be mailed to the woman and her private physician, who should have them available within 4 days. Positive results will also be called in to the doctor as quickly as possible. Any woman who does not have a physician can be assigned one on the van with a call to the Barnes Hospital Physician’s Referral Service.

Evens and Brink hope that the van will remove two barriers long associated with mammography. By stopping near places where women live and work, it will make the screening efficient and convenient. By dramatically cutting the cost of a mammogram, the van will also make the procedure more affordable. Elsewhere in the St. Louis area, Brink says, a mammogram’s cost ranges from $80 to $142.50; on the van, it will be $50.

However, other psychological barriers remain. “We know that there are women who are resistant to this kind of study because of embarrassment, fear of the unknown or lack of knowledge. Our goal is to try to reach these women and overcome that resistance,” Brink says.

That task also involves convincing women that the level of radiation used in today’s mammography is so low that it poses virtually no health risks. “We like to compare it to other risks of everyday life,” says Destouet. “The risk of dying from radiation associated with low-dose, screen-film mammography is the same as the risk of dying from smoking three quarters of one cigarette or flying 400 miles in a jet airplane.”

Women must weigh these facts against the grim statistics of breast cancer. One in eleven women will develop breast cancer; last year, some 38,000 died of the disease. Shockingly, the rate of death from breast cancer hasn’t changed in 50 years. “Everyone is surprised at that, with all the miracle drugs we have and the tremendous technology available,” says Destouet.

“The fact is that most women don’t come in for a mammogram until they find a lump in their breast. By then, in half the cases, the tumor has already spread to the lymphatic system and most of them will die of cancer within 10 years no matter what we give them. The only way to decrease this mortality rate is to pick up the cancer early, before it can be felt, when 90 percent of the tumors have not spread beyond the breast,” she says.

The van staff will recommend mammograms according to the American Cancer Society’s 1983 guidelines: from ages 35 to 40, when the incidence of breast cancer is low, a baseline mammogram, useful for later comparison; from ages 40 to 50, a mammogram every 1 or 2 years, depending on a woman’s risk factors (such as a strong family history or personal history of breast cancer); from age 50 on, every year.

Monthly breast self-examination is important, too, but by itself is insufficient. A study of 280,000 women by the National Cancer Institute and the American Cancer Society showed that
42 percent of all cancers were detected by mammography alone, whereas only 9 percent was found by physical examination alone.

In the St. Louis area, says Evens, there may be half a million women who should undergo mammography. With the van handling up to 60 women a day, thousands will still need screening. "Our purpose is not to take patients away from hospitals," adds Brink, "but to get patients who are currently not participating in any breast screening to commit to it, whether they choose a hospital or our vehicle."

The finished van makes its first stop in August, and MIR is currently planning a promotional campaign to alert the community to its existence. Brink, who will continue as van coordinator in charge of training, maintenance, and planning, is now setting up the van's schedule.

Rothman hopes that, along with early cancer detection, the van will be providing one more service: Its familiar sight may help wipe out some of the fear of cancer, which often prevents women from seeking treatment. Seeing the van in their own neighborhoods may encourage women to make mammography a matter of fact part of their everyday lives.

"We need to get the message to women that breast cancer is still a formidable killer," says Destouet. "We are offering women a more convenient and less expensive screening test. I hope they will utilize it."

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"We have never before taken an x-ray test to the community."

Top: Experienced radiologists such as Judy Destouet, M.D., head of mammography, read the mammograms produced on the van, ensuring diagnostic accuracy.

Bottom: Dedicated, low-dose, screen-film mammographic equipment is used on the Mammography Mobile.
FYI

SYMPOSIA

James A. Purdy, Ph.D., professor and head of radiation physics in MIR's Division of Radiation Oncology, presented "State-of-the-Art of High Energy Photon Treatment Planning" at the 21st Annual San Francisco Cancer Symposium, February 28-March 1. He attended the American Institute of Physics Governing Board Meeting in New York, March 13-15, and participated in an advisory meeting to the Radiotherapy Development Branch (RDB) of the National Cancer Institute (NCI) concerning clinical electron dosimetry in Bethesda, Maryland, April 9.

James A. Purdy, Ph.D.

Joseph R. Simpson, M.D., Ph.D., assistant professor of radiology, was a member of the "Breast Cancer Panel" at the Annual Meeting of the National Medical Association—Region V Meeting in St. Louis, May 3.


Bahman Emami, M.D.

Alan B. Fein, M.D., instructor of radiology in the Abdominal Section, presented a paper on "Diagnosis and Staging of Renal Cell Carcinoma: MR vs. CT" at the Scientific Session of the American Roentgen Ray Society, Washington, D.C., April 17.

Alan B. Fein, M.D.

David A. Trenkner, M.D., radiation oncology resident, spoke on "Solitary Plasmacytoma—Who Converts to Multiple Myeloma?" at the American Roentgen Ray Society Meeting, San Francisco, April 10.

David A. Trenkner, M.D.


Carlos A. Perez, M.D.

Michael A. Gado, M.D.

Mokhtar Gado, M.D.

Mokhtar Gado, M.D., professor of radiology, presented "Anatomical Correlates of MRI and CT Imaging," "Hydrocephalus and Atrophy in Adults," "CT of the Cervical Region and Spinal Cord" and "Imaging of the Sella, Orbit and Extracranial Lesions" as a faculty lecturer at the 7th Annual Winter Conference in the High Sierras, sponsored by the American College of Medical Imaging Conference, Lake Tahoe, Nevada, February 2-7. "How to Proceed with CVA? CT, MRI, and Angiography," "Differential Diagnosis of Sellar and Suprasellar Lesions" and "Postoperative Brain—CT, MRI and Angiography" were Gado's annual presentations for the Neuroradiology Review Course, Loyola University, Maywood, Illinois, May 3-4. Gado spoke on "MRI Studies on Patients with Cerebrovascular Disorders" as a program speaker at the 26th Scandinavian Congress of Neurology, Uppsala, Sweden, June 11-14.

Mokhtar Gado, M.D.

Michael G. Karnaze, M.D.

Michael G. Karnaze, M.D., a resident in diagnostic radiology, presented "CT Myelography and MRI in Acquired Spinal Cord Lesions" at the American Roentgen Ray Society Meeting, Washington, D.C., April 15.
FYI

SYMPOSIA

William A. Murphy, Jr., M.D.


Gilbert H. Nussbaum, Ph.D., associate professor of radiation physics in radiology, was invited to speak on “Physics as an Art and a Profession” to the eighth grade science class of Rockwood Junior High School, Fenton, Missouri, January 29. “Physics and Instrumentation for Hyperthermia” was the invited talk for the Society of Radiation Oncology Administrators at the Annual Meeting of Radiation Research Society/North America Hyperthermia Group, Las Vegas, April 10–15. Papers contributed at the meeting included “Shaping of Lateral Fields with ‘Hellos’: A Flexible Multibeam Device for Deep-Tumor Hyperthermia” and “Manipulation of Axial Heating Patterns with a Prototype, Three-Electrode Device for Deep-Tumor Hyperthermia.” As invited speaker, Nussbaum lectured on “Physics of Local and Regional Hyperthermia” to the Hyperthermia Symposium of the Delaware Chapter of the American Association of Physicists in Medicine at the University of Pennsylvania School of Medicine, Philadelphia, May 9.

Bruce L. McClenann, M.D.

Bruce L. McClenann, M.D., professor of radiology, presented a refresher course on “Uroradiologic Imaging: Update 1986” at the American Roentgen Ray Society Meeting, Washington, D.C., April 12–17. He presented the paper “Intercostal Space Nephroscopy” at the Scientific Session of the Society of Uroradiology and gave two lectures: “CT/MRI Correlations in the Retroperitoneum” and “Contrast Reactions: The New Contrast Media.” The meeting was in Scheveningen/den Haag, Holland, May 2–8. Dr. McClenann is the secretary-treasurer of the society. The lectures “Oncologic Imaging of the Bladder” and “CT/MRI Correlations in Retroperitoneum” were given at Uroradiology 1986, Florence, Italy, May 9–10. Four lectures—“The New Contrast Media—When, Where and How Much?” “Renal Inflammatory Disease,” “Renal Cancer: CT Staging” and “Renal Lymphoma”—were given for a postgraduate course sponsored by Louisiana State University Medical Center in Aspen, Colorado, March 2–5.

Todd H. Wasserman, M.D.

Todd H. Wasserman, M.D., associate professor of radiology in clinical radiation oncology, presented a paper reviewing the Washington University Medical School’s experience in the “Treatment of Solitary Plasmacytomas, Response to Radiation and Progression to Multiple Myeloma” at the American Society of Clinical Oncology Meeting, Los Angeles, May 6. His speaking engagements during his June 6–20 trip to China included “Chemical Modifiers with Radiation Effects,” “The Modern Treatment of Hodgkin’s Disease” and “The Role of Radiation Therapy in Non-Hodgkin’s Lymphomas.” Wasserman’s wife and three radiotherapists accompanied him. Wasserman attended the International Symposium on Intraoperative Radiation Therapy, a program that may be developing at Washington University Medical Center. The meeting was held in Paris, April 14–16. As an invited participant in the first meeting of International Clinical Trials in Radiation Oncology, Wasserman was one of eleven U.S. radiation therapists attending this meeting in Paris, April 13-16. He presented an overview of current clinical trials involving radiation in lymphomas, and he will co-author a report on this with...
I Joseph K. T. Lee, M.D., professor of radiology, presented "An Integrated Approach to Imaging GU Tract" for a refresher course at the American Roentgen Ray Society Meeting, Washington, D.C., April 19. As an invited speaker, Lee presented "Reproductive Biology and Magnetic Resonance Spectroscopy and Imaging" at a National Institutes of Health workshop in Bethesda, Maryland. As a faculty member, Lee spoke on diagnostic imaging for a postgraduate course sponsored by the State University of New York in Acapulco, Mexico, in February. He has also served as a faculty member at a Loyola University-sponsored postgraduate course in Maui, Hawaii, March 3–7; and an MRI course in Los Angeles in April.

Judy M. Destouet, M.D., associate professor of radiology, was guest lecturer on "Breast Cancer Screening" at meetings of the Missouri Association for Medical Transcription, Washington University Medical Center, February 12, and the Monroe County Chapter of the American Cancer Society, Waterloo, Illinois, March 25. Other speaking engagements included: "Early Detection of Breast Cancer" at the Junior League of St. Louis, February 4; "Risk Factors in Breast Cancer" on "Morning Magazine," KMOX Radio, St. Louis, February 12; "Mammography and Breast Cancer" for "The Hotline," WJIY Radio, Centralia, Illinois, April 14, and Salem Community Center, Public Hospital of the Town of Salem, Salem, Illinois, April 22; "Mammography and Other Ways to Detect Early Breast Cancer," free seminar for lay community, Washington University Medical Center, April 30.

Jay P. Heiken, M.D., assistant professor of radiology, was invited lecturer on "Magnetic Resonance Imaging of the Abdomen and Pelvis" at New York University, New York, March 14, and spoke on "Recent Advances in Magnetic Resonance Imaging" and "CT of the Peritoneal Spaces" as visiting professor at Columbia University, New York, March 12–13.

Carl A. Geyer, M.D., instructor in radiology, spoke on "Pediatric Neuroradiology" at Sick Children's Hospital, Toronto, Ontario, April 14–May 10.

James A. Purdy, Ph.D., professor of radiation physics in radiology and chief of the Physics Section, presented lectures on "Three-Dimensional Treatment Planning" at Kenneth Norris Cancer Center, Southern California Society of Graduate Radiologists, and Loma Linda University Medical School, as part of the American Cancer Society Oncology Consultant Program, February 2–8. As visiting professor, he presented "Physics Considerations in Treatment of Hodgkin's Disease" at M. Erfan Hospital, Jeddah, Saudi Arabia, February 23–27.

Professor Tubiana, head of the radiotherapy oncology program at the Institute of Gustave Roussey in Paris, Wasserman was invited to be one of four radiotherapists to formulate potential new policies for the conduct of cooperative clinical trials in the United States at a meeting at the National Cancer Institute, April 1–2. Thirty individuals, who represent a spectrum of previous experience at the National Cancer Institute and were heavily involved in clinical trial research, attended the meeting. Wasserman is on sabbatical at the Medical Research Council Laboratories in Radiation Biology and Oncology at Cambridge University, England, July 1, 1986 through January 1, 1987. Further experimental studies on combined sensitizers will be conducted, including a sensitizer used in the United States, SR-2508, and a British sensitizer, R03-8799, as well as other compounds. It is hoped that this work will lead to new combined drug trials in the future. Wasserman's wife and two children will accompany him to England.

Judy M. Destouet, M.D.

Jay P. Heiken, M.D.

Carlos A. Geyer, M.D.
FYI

VISITING PROFESSORS
& GUEST LECTURERS

Bruce J. Walz, M.D.

Bruce J. Walz, M.D., associate professor of radiology, was guest lecturer for the following: "Role of Endocavitary Treatment in Early Rectal Cancer" at the Greater St. Louis Society of Radiologists, St. Louis, February 11; "Radiation Therapy: Techniques and Results" at the American Cancer Society, Missouri Division, and the Missouri Radiological Society, St. Louis, April 5; "Radiation Therapy for Prostate Cancer" at St. Joseph’s Health Center, St. Charles, Missouri, April 8; "Radiotherapy—Complementary, Adjuvant, Palliative" at Breast Cancer Update and Alternatives Seminar, Sikeston, Missouri, April 12; "Use of Radiation Therapy in Management of Recurrent Colon and Rectal Cancer" at a Symposium on Rectal and Anal Cancer, Jewish Hospital, St. Louis, May 10.

Barry A. Siegel, M.D., professor of radiology and director of the Division of Nuclear Medicine, was the faculty participant for "Clinical Nuclear Medicine: 1986" sponsored by Harvard Medical School, Boston, April 7–11, speaking on "Scintigraphic Diagnosis of Pulmonary Embolism" and "Evaluation of Renal Morbidity and Function by Radionuclide Imaging."

William A. Murphy, Jr., M.D., professor of radiology, as visiting professor to the Department of Radiology, presented "Metabolic Bone Disease," "Rheumatoid Variants and Look Alikes" and "Elbow Fat Pads" at Allegheny General Hospital, Pittsburgh, January 29–30; and "Current Perspectives in Body MRI" at the University of Texas, San Antonio, Texas, March 4.

Bruce L. McClennan, M.D., professor of radiology, as guest lecturer, presented "CT Staging of Renal Neoplasms: Pitfalls and Problems" at the Royal College of Radiologists postgraduate course, London, May 17. "CT/MRI Renal Neoplasm" was McClennan's topic as guest lecturer for the New England Roentgen Ray Society, Boston, February 14. Serving as visiting professor, Dr. McClennan gave two lectures, "CT Staging of Renal Neoplasm: Pitfalls and Problems" and "CT/MRI of the Retrorperitoneum," at the University of Sheffield Medical Center, Sheffield, England, May 13. McClennan also served as National Guest Lecturer in Neuroradiology at Armed Forces Institute of Pathology, Washington, D.C., March 10–11.

Joseph R. Simpson, M.D., Ph.D., assistant professor of radiology, spoke on "Brain Implants" for the American Association of Medical Dosimetrists, Chicago, June 23, and at Loyola University, Chicago, June 24.

Harvey S. Glazer, M.D.

Harvey S. Glazer, M.D., assistant professor of radiology, gave lectures on "CT of the Thorax" and "MRI/CT of the Chest" at the American College of Chest Physicians Meeting, Palm Springs, California, February 14. "MRI/CT of the Thorax" was presented at the Louisville Radiological Society, Louisville, March 19.

Gilbert H. Nussbaum, Ph.D., associate professor of radiation physics in radiology, was invited to present "Physics and Technology for Hyperthermia in Cancer Therapy" at the Massachusetts Institute of Technology, Hyperthermia Center, Cambridge, Massachusetts, May 30, and "Hyperthermia: Present Practice and Future Prospects for Cancer Therapy" at the Health Sciences Center, School of Medicine at the State University of New York at Stony Brook, June 18.

Carlos A. Perez, M.D., professor of radiology and director of the Division of Radiation Oncology, as visiting professor, spoke on "Hyperthermia and Cancer Therapy" at the Department of Radiation Oncology, University of Kansas Medical Center, Kansas City, Kansas, February 19.

Awards

Carl A. Geyer, M.D., instructor in radiology, has been made a senior member of the American Society of Neuroradiology.

Dennis M. Balfe, M.D.

Dennis M. Balfe, M.D., assistant professor of radiology, has been named a member of the Society of Computed Body Tomography, bringing the total number of MIR staff in the society to five.

Todd H. Wasserman, M.D., associate professor of radiology, was a member of the Gold Medal Award Committee of the American Society of Therapeutic Radiology and Oncology for 1986. This five-person committee chose the Gold Medal Award Winner of the Society and other awards the society offers.

William A. Murphy, Jr., M.D.
**Publications**


Bruce J. Walz, M.D., associate professor of radiology, presented "Prostatic Carcinoma and its Therapeutic Modalities (Radiation Therapy for Prostatic Carcinoma)" at Jewish Hospital Grand Rounds, January 29.

Barry A. Siegel, M.D., professor of radiology and director of the Division of Nuclear Medicine, was appointed associate editor for the Professional Self-Evaluation and Continuing Education Program of the American College of Radiology. (See story on page 2.)

James A. Purdy, Ph.D., professor of radiation physics and chief of the Physics Section, was appointed to the Governing Board of the American Institute of Physics to serve a 1-year term until March 1987.

Bruce J. Walz, M.D., associate professor of radiology, was appointed chairman of the Membership Committee of the St. Louis Metropolitan Radiology Society.

**Appointments**

Judy M. Destouet, M.D., associate professor of radiology in the Musculoskeletal Section and head of mammography, has been appointed to the Task Force on Breast Cancer and Mammography for the Missouri Division of the American Cancer Society.

William J. Pao, M.D., has been appointed chief resident, and James Geurin, M.D., has been appointed assistant chief resident in the Division of Radiation Oncology for the 1986-87 academic year.

Beverly J. Kobeissi, M.A., M.B.A., administrator for the Division of Radiation Oncology, was recently appointed to the Adult Education and Customized Training Panel of the Long-Range Planning Committee of the St. Louis Public Schools. She will continue as a member of the General Advisory Committee.

**Grand Rounds**

Judy M. Destouet, M.D., associate professor of radiology, spoke on "Breast Cancer Screening" at the Medical Grand Rounds of Sparta Community Hospital, Sparta, Illinois, May 20, and at Fort Leonard Wood, June 10.

Bahman Emami, M.D., associate professor of radiology, spoke on "Hyperthermia in the Treatment of Head and Neck Cancers" for ENT Grand Rounds, Washington University Medical Center, April 30.

**FOCAL SPOT, SUMMER 1986**
ELECTIONS

James A. Purdy, Ph.D., professor of radiation physics in radiology and chief of the Physics Section, was elected chairman of the board for the American Association of Physicists in Medicine for 1986, having served as president in 1985.

Bahman Emami, M.D., associate professor of radiology, was elected co-chairman of the Lung Committee at the RTOG Meeting in San Francisco, January 15–16.

CONTRIBUTIONS

Bruce L. McClellan, M.D., professor of radiology, was elected president, and G. Leland Melson, M.D., professor of radiology, was elected vice-president of the Greater St. Louis Society of Radiologists at the April meeting.

The Cancer Information Center, co-sponsored by the Mallinckrodt Institute of Radiology and the Barnard Free Skin and Cancer Hospital at the Washington University Medical Center, has received generous support during this last quarter. The list of donors from February through mid-June includes:

- Marie K. Nash in memory of Viva Lloyd
- Carrie Mae Baldwin in memory of Henry McClure
- Mr. and Mrs. Leroy Kanterman in memory of Eydie Goldman
- Mr. Richard King
- Mrs. Mildred B. Chambers
- Mr. and Mrs. Thad H. Taylor in memory of Arllis Martin
- Mr. and Mrs. Kevin Bailey in memory of Ralph Machens
- Mr. and Mrs. Jon A. Roos in memory of Mrs. Foley, mother of Connie Enea
- Mrs. Fanchon Lappeman in memory of Mrs. Foley, mother of Connie Enea
- Mr. and Mrs. John Mitchell in memory of Margarite Brown
- Mr. and Mrs. Gene Welsh in memory of Eugene D. Neihaus
- Right of Way Department of the Missouri Highway and Transportation Commission in memory of Helen C. Howe
- Mr. and Mrs. Wayne Page in memory of Anne Pohn
- Mr. and Mrs. Lee Horstmann, Mr. and Mrs. Hy Baider, Mr. and Mrs. Bob Vandergriffe in memory of Jasper Steen
- Mrs. Shirley Strasser in memory of Connor H. Awa1t
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- Mr. and Mrs. Ronald Kassman in memory of James W. Murphey
- Mr. and Mrs. Milton Richter in memory of Theodore Noll
- Mr. and Mrs. Harold Bassin in memory of Phil Trembot and Maurice Steinman
- Elizabeth K. Frye in memory of James Gamewells
- Tom Chaney in gratitude for help from the Cancer Information Center during the last 2 years
- Mrs. Sidona Hay and Jackie Hay in memory of Irma Lunigan
- Theodore and Corinne Baumgarten in memory of Edgar L. Levin, Sr.
- Golda B. Staley in memory of Helen Woodruff
- Anthony and Pauline Brown Victor and Virginia Frank in memory of Edwin C. Brendecke
- Ruma’s Deli in memory of John Shine
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- Mollie Wilson in memory of Anna Appelhaus
- Dorothy Kramer in memory of Lorraine Reineke
- Mrs. Cora O’Bourke and Miss Emma Ebingor in memory of Irma Reed
- Mrs. Evelyn C. Krumm in memory of Parico Spilker
- Mary Ann Krey
- Anonymous donation of $200

CALENDAR

September 18–20, 1986
Second Annual Clinical Hyperthermia Symposium
Mallinckrodt Institute of Radiology

September 19–21, 1986
Midwest Clinical Magnetic Resonance Imaging Conference
Omni International Hotel, St. Louis

October 30, 1986
Oncology Update: Current Controversies in Management of Carcinoma of the Breast
St. Luke’s Hospital, St. Louis

November 2–7, 1986
American Society for Therapeutic Radiology and Oncology
Los Angeles, California

November 30–December 5, 1986
Radiology Society of North America
Chicago, Illinois

John C. Villforth, director of the Center for Devices and Radiological Health, Food and Drug Administration

September 8, 1986
Fifteenth Annual Wendell G. Scott Memorial Lecture
"Regulation and Education: Is There a Proper Balance for the Food and Drug Administration?"
John C. Villforth, director, Center for Devices and Radiological Health, Food and Drug Administration
Mallinckrodt Institute of Radiology
On June 4, 1986, Mallinckrodt Institute of Radiology lost a great physician, teacher and friend when Dr. Daniel R. Biello died after a 12-year struggle with Hodgkin’s disease.

Dr. Biello first came to MIR in 1973, after graduating with honors from Case Western Reserve University School of Medicine. At the time of his death, Dr. Biello was professor of radiology and associate director of the Division of Nuclear Medicine.

Barry Siegel, M.D., professor of radiology and medicine and director of the Division of Nuclear Medicine, worked closely with Dr. Biello for many years and developed an enduring respect for him as a colleague and a friend. What follows is an excerpt from the eulogy Dr. Siegel delivered in Cleveland at the memorial service for his friend:

Daniel R. Biello, M.D.
1947 to 1986
It is very difficult for me to adequately express the special feelings that I have for Dan and the special way in which Dan touched the lives of so many of us in St. Louis and at Washington University; those he knew socially and closely and those he knew only professionally; those who had the pleasure to train him in radiology and nuclear medicine and those whom he trained; those who worked with him and those who worked for him; the patients he cared for and the physicians who cared for him over many years. We interacted with Dan in many different ways, but each of us felt most of all that we were interacting with a friend. No matter what his own problems and preoccupations, and they were many, Dan always found the time to help others deal with their problems, professional or personal, trivial or major. He listened well, and his advice was sound—reflecting an insight and wisdom far beyond his relatively few years. Because of this remarkable attribute, Dan, whose own life was filled with turmoil, had a stabilizing influence on those around him. This influence was frankly palpable within the Division of Nuclear Medicine.

Dan was, without any exaggeration, an extraordinary radiologist—indeed, an extraordinary physician. Doing the best job he could for each and every patient was his pre-eminent objective. In large measure, because he understood all too well what it meant to be ill and to be a patient, his compassion for his patients was unparalleled. He was never satisfied with doing an acceptable job but insisted on “getting it right.” The images we deal with in nuclear medicine often are very difficult to interpret, or, to use Dan’s favorite expression in our reading room, “too tough.” Yet he proved over and over that, with a touch of ingenuity and a lot of common sense and perseverance, it was never “too tough.” For this reason, we all turned to him, many times each day, to help us with those tough cases. Even more important, Dan’s approach to the practice of radiology and nuclear medicine lives on because of the scores of residents who learned by his example. As a scientist, Dan always searched for the real truth, and I believe his contributions to the scientific literature of radiology and nuclear medicine will be lasting contributions, unlike so much of what is published these days. Dan had a particular interest in pulmonary embolism disease and wrote 19 scientific articles on this one topic alone, describing research that he did with collaborators at Washington University, Harvard Medical School, Johns Hopkins, Columbia, Yale and the University of Michigan. He developed new criteria for the interpretation of ventilation-perfusion scans. These criteria have been adopted throughout the world, and the scientific literature now refers to them as the “Biello criteria.”

Dan confronted his long illness not by becoming bitter and cynical, as so often happens, but rather with optimism and courage. He rarely complained, even when he was quite ill. In fact, he always seemed to be most concerned that his illness was preventing him from “pulling his weight,” thus inconveniencing others. However, as I told him many times, even on his bad days, he functioned at a level that was more than two standard deviations above the mean. Because of his illness, he had a clearer understanding than most of us ever will of what is really important in life and of the value of close relationships with other human beings.

There is much more that I could say, but Dan didn’t like platitudes and extolled brevity as a virtue. The feelings of the people who knew and worked with Dan are perhaps best summarized by the comment made by one of our former residents when she learned of Dan’s death. She said, “I feel that I’m a better person for having known Dan.”

We will surely miss him, but we will not forget him. The institute already has established the annual Daniel R. Biello Memorial Lectureship in his honor. The many things he taught us over the years and his contributions to the excellence of this institute will not fade.

Contributions to the Daniel R. Biello Memorial Lectureship may be sent to Mallinckrodt Institute of Radiology, 510 South Kingshighway Boulevard, St. Louis, Missouri 63110.
NEXT ISSUE: “Mallinckrodt on the Move”—once Pediatric Radiology, the fifth floor will soon be the home of computed body tomography scanners.