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SPACE—Past, Present and Future
At the Mallinckrodt Institute of Radiology

By Ronald G. Evens, M.D.
Director
I have decided to comment on the subject of space at the Mallinckrodt Institute. This topic came to mind because of the many current construction projects in various stages of planning or completion that we have developed in order to have enough future space. During my past five years at the Mallinckrodt Institute, space has been our most difficult problem and has taken many hours of thought and action. I hope this article will bring you up-to-date on our space allocations and give you a look at our future.

The Mallinckrodt Institute began operation in 1931 after completion of the original nine floors (one below ground). Each floor had 6,372 gross square feet, for a total of 57,500 square feet. Throughout this article, I will always describe our space in dimensions of gross square feet - essentially the entire amount of square footage between walls. Net or usable square feet are always less and require deducting stairwells, elevators, hallways, etc. The initial building was considered huge, and correctly so, since the previous department of radiology was only three rooms in Barnes Hospital.

This Institute, with space to grow, was one of our biggest assets. As the field of radiology (and its associated research and teaching functions) developed in the 1930's, 40's and 50's, we had readily available space in which to grow. In the 1930's and 40's, the Mallinckrodt Institute provided space for several non-radiological functions for the University. I am personally aware that the Institute once housed an electron microscope, considerable animal facilities, and the Department of Illustration and Photography for the Medical School at various times. As radiology required more space, these functions were moved elsewhere.

The initial space became “tight” in the late 1950's and early 60's. Dr. Juan M. Taveras, the third Director of the Mallinckrodt Institute (1965-1971), recognized this problem and planned and constructed the first major addition to the Mallinckrodt Institute. This construction added four floors to the original Institute and five floors (of smaller dimension) to the west side. A total of 43,900 square feet was dedicated in June 1971. Approximately half of this space was finished, primarily for research functions, and half was left as shell space. Our space needs quickly became acute and my first direct involvement with construction was in the finishing of the shell space in 1971 and 1972. By 1973, the Mallinckrodt Institute occupied 101,400 square feet.

(I have difficulty visualizing the amount of space in areas with square footage measurements. For example, I have to relate various size rooms to known rooms before they make sense to me, and perhaps it may help you to know that the playing surface of a football field is approximately 48,000 square feet. Therefore, as of 1973, the square footage of the Mallinckrodt Institute was slightly more than two football fields in size.)

All space from the 1972 addition was occupied by 1975 and our space needs continued. A partial solution has been found in transferring certain activities to outside the Institute. In 1976, we obtained 15,600 square feet in the 4511 Forest Park building (approximately three blocks from the Institute), and several research and clinical functions of the Division of Radiation Oncology have now moved to this
building. We also occupy approximately 23,000 square feet in Barnard Hospital, Queeny Tower, Barnes emergency room, admitting, and a film library warehouse approximately one block away. Significant diagnostic radiology and nuclear medicine functions are located in these areas.

What about the future? Our next major project is in conjunction with Barnes Hospital and the building of 34,000 square feet in the West Pavilion. The Mallinckrodt Institute will own two floors (as a condominium) in this very large construction program, and will transfer the clinical activities of nuclear medicine and cardiac radiology and establish a new outpatient radiologic facility. We also plan to construct approximately 9,000 square feet in the new Children’s Hospital for pediatric radiology. When these projects are completed (in three to four years), the Mallinckrodt Institute will occupy approximately 181,000 square feet - almost four football fields.

As I gaze into the space crystal ball and try and view in the future after five years, I see two major problems with space. First, I predict that our space requirements will increase. The demand for clinical radiology will increase and our research and teaching requirements will grow by even greater amounts. It is nearly impossible to add space to the Institute and our abilities to obtain space in other locations (close to the medical center) will become more difficult. Second, the cost of space is very high and will undoubtedly increase. Construction costs are now $100 per square foot or more, and it now costs us more than $7.00 per year per square foot to maintain and use space. Space is a significant financial burden and requires long-range financial planning to build and maintain. We have been able to add space by very generous gifts from our benefactors, research funds, and clinical income. The future will require funds from all three sources.

Proposed Expansion of Mallinckrodt Institute Facilities in West Pavilion.
Cancer research on the laboratory and clinical levels has been a major health priority for the past decade, and the time and money devoted to such research has fostered many significant advances in diagnosis and treatment. Yet it seems that cancer is more of a problem than ever. This is not only because of a decline in cancer research and treatment developments; it is also closely related to the increasing levels of carcinogenic materials in our environment.

The presence of carcinogens in the work environment is by no means a new thing; the first linkage of environment to cancer was documented in 1775. Little by little, the list of known carcinogens has grown and their effects are now felt outside the workplace, posing an inescapable threat to the general community. For example, in 1947 it was documented that an unusually high percentage of asbestos workers developed lung cancer. Now, it is no longer possible to escape asbestos contamination simply by avoiding the occupation; virtually 100% of all city dwellers coming to autopsy today have asbestos in their lung tissue.

It is a regrettable fact that the invasion of the environment by carcinogens has gone hand in hand with increased agricultural and industrial technology. Today, according to the World Health Organization, 75%-85% of all cancers are related to the environment.

With the cancer incidence rate showing no tendency to taper off, the need for basic research is more pressing than ever. Present research covers three main aspects of cancer: 1) cause and prevention, 2) biology of the cancer cell, and 3) treatment. Research on the causation of cancer with a view to ultimate prevention, covers a wide spectrum of activities. Among them are population studies to determine those groups most at risk and studies of known and suspected carcinogenic agents. The latter studies will lead to identification of carcinogens, reduction of their hazardous potential, and clarification of the process by which they cause normal cells to become cancerous.

Current treatment research is attacking the problem from a number of different directions. Basic research on chemotherapeutic agents has been a major priority for a number of years. As a result of painstaking research, chemotherapy is now frequently used in the management of disseminated disease, since it is able to reach malignant cells anywhere in the body. The Section of Cancer Biology at MIR has made significant contributions to drug treatment through its studies on various drugs, alone or combined with other drugs or radiation. The Ampho-
What is the Outlook?

tericin-B project, in which members of the Section and of the Department of Medicine are participating, has come through its basic research phase and has now reached the stage of clinical trials. Other fundamental studies of various combinations and sequences of anticancer agents have provided the foundation for clinical protocols involving adriamycin, BCNU, cyclophosphamide, and other drugs.

Immunotherapy is another important area of cancer research. In the past decade, knowledge of the basic mechanism of the immune response has increased enormously and there is mounting evidence that the presence of tumor does elicit a host immune response. If such a response could be intensified through agents which boost the host's immunocompetence, the host's own ability to overcome the disease would be enhanced. The Section of Cancer Biology is looking into such possibilities and has already developed clinically useful tests of cancer patients' immune capability.

continued
Since cancer is fundamentally a disease of the cell, basic cellular research is mandatory if cancer is to be understood and treated effectively. Cancer cells fail to exhibit the processes of normal growth and differentiation; as a result, they multiply without restraint and invade normal tissue. They also tend to break away from their original site and seed secondary growths in other parts of the body. Investigation into the reasons for these characteristics is essential. The computer has become an invaluable aid in understanding and predicting the complex metabolic processes in cancer development and is being used at MIR in that capacity.

Another promising area is hyperthermia. Members of the Physics Section of Radiation Oncology are examining means of measuring and monitoring temperatures in tumor and surrounding normal tissue in an attempt to inhibit tumor growth by regulating tissue temperature.

Clinical research has further modified the promising results emerging from the lab. Clinical protocol studies utilizing various treatment regimens have allowed physicians to slowly but surely eliminate inadequate techniques or drugs, replacing them with those proven effective.

In the area of radiation therapy, sophisticated treatment planning joins forces with better equipment and delivery techniques to make this mode of treatment extremely productive; concrete results are evidenced by increasing cures and decreasing complications. Further technological developments continue to improve the quality of radiation oncology; for example, we can now obtain more accurate patient contours with a stereophotogrammetric system developed at MIR by the Physics Section.

Presently, Radiation Oncology staff members are attempting to correlate CAT scan data with the clinical course and prognosis of cancer patients; such information could be extremely valuable in determining the effects of a treatment regimen and in adjusting the regimen as treatment continues.

Good clinical research is an extremely important part of any comprehensive cancer program; careful analysis of problems encountered in the clinic will give the biologist a good idea of what his experimental data mean in human terms and what course his research should take in the future.

Although the cancer problem is still a grave one, and a great amount of further research is required if its mysteries are to be unraveled, improvements in survival are encouraging. In the early 1900's few cancer patients had any hope of long-term survival. In the 1930's less than one in five were alive at least five
years after treatment. In the 1950's it was one in four. Now the ratio is one in three.

In some types of cancer, drugs may now prolong survival (e.g. ovarian and breast carcinoma and multiple myeloma); in others, chemotherapeutic agents allow some patients to achieve a normal lifespan (e.g. acute childhood leukemia, Hodgkin's disease, and some of the childhood solid tumors).

In breast cancer, the leading site of cancer in American women, improved results are beginning to emerge in early detection through the use of mammography and Xeroradiography, and in the treatment of early and advanced disease. Recent analysis of surgery in this same disease suggests that the traditional radical surgery may not be any more effective than less radical mastectomy. If follow-up studies confirm this, there may be a significant departure from the traditional radical treatment.

Conventional x-ray therapy continues to improve and remains extremely important in controlling localized tumor. Cure rates of 1955 compared to those of 1970 show improvements which can be largely credited to radiation therapy: cervical cancer, from a 30% cure rate to 60%; carcinoma of the nasopharynx, from 20% to 40%; inoperable prostatic carcinoma, from 20% to 70%.

Of course, cure rates in many sites remain the same or have increased slightly, but the various successes in some types and sites and the multiplicity of today's research and clinical approaches to the problem signal a brighter outlook.

### Nuclear Medicine Featured

The history, explanation, and progress of Nuclear Medicine were recently brought home to St. Louis through a series of four articles in the St. Louis Post Dispatch featuring Mallinckrodt's Division of Nuclear Medicine. Writer Jack Rice became interested in the subject when, as a patient at Barnes, he was sent to Nuclear Medicine for bone scans which aided greatly in the diagnosis of his problem. The result: a comprehensive story covering the work of the Division, the cyclotron, PETT, and the "Nuclear Medicine Men."

### Library Memorial

Anyone wishing to remember a deceased relative or friend has the opportunity to do so in a permanent and valuable way through the Edward Mallinckrodt Institute of Radiology LIBRARY MEMORIAL. Your gift will be used to purchase a library volume which will contain a book plate acknowledging the name of the deceased and the donor. The relatives of the deceased will receive a Library Memorial card and book plate designed by Mrs. William H. McAlister explaining the nature of this memorial and expressing the gratitude of the Institute. Gifts may be sent to:

Library Memorial Fund
Edward Mallinckrodt Institute of Radiology
510 South Kingshighway
St. Louis, Missouri 63110

### MIR Welcomes

SEVEN RUSSIAN SCIENTISTS talked to Dr. Ronald Evens on their visit to Mallinckrodt Institute, March 8, to evaluate new medical techniques and equipment.

Our thanks to Dr. Carlos Perez and Mary Jo Tillman for their cooperation on this article.
Advances in the PETT Concept

In the spring of 1975, the Positron Emission Transverse Tomograph (PETT III) was put into operation at Mallinckrodt Institute of Radiology. A unique imaging device developed by a team of bio-medical scientists from the Division of Radiation Sciences, under the direction of Dr. Michel Ter-Pogossian, the PETT produces cross-section imaging of the body by “emission;” that is, the patient is injected with positron emitting radio-pharmaceuticals or inhales radioactive gases which are subsequently emitted by his tissues and are detected by the machine. The test can be done without hospitalization, inconvenience, or discomfort.

Positron emission transaxial tomography represents an advance over current nuclear imaging systems which obtain two dimensional images that are degraded by the superpositioning of overlying structures. A high contrast machine, the PETT differentiates tissues on the basis of subtle differences in the radioactive uptake of the tracer in these tissues. Its very quantitative behavior can accurately predict the concentration of the radioactive tracer in the region of interest. This capability enables the PETT to characterize the different functions of an organ by the use of different radioactive tracers.
Now, two years later, a second machine, PETT IV, has been developed for diagnostic use in evaluating heart disease in the Coronary Care Unit of Barnes Hospital. PETT III has been sold to Brookhaven National Laboratory, Long Island, New York, to be used for experimental evaluation of new radiopharmaceuticals. Brookhaven, equipped with a cyclotron and a large radiochemistry group, did not have an imaging device.

In developing the PETT IV, Dr. Ter-Pogossian and research associate, Mr. Nizar Mullani, realized that the clinical utility of the PETT would be greatly enhanced by having multi-slice capability. Accordingly, they incorporated a significant design change in the development of a new PETT. The multi-slice capability is achieved by using a long cylindrical detector divided into four regions and aided by lead septa and electronic positioning of the gamma ray within the detector.

"With this design, we can scan four slices or layers simultaneously," said Mullani. "Preliminary tests indicate that PETT IV is approximately four times as sensitive as PETT III and has slightly better spatial resolution."

Even though the machine, which should be operational for clinical studies in April, is specifically designed and built for heart studies, it can also visualize other organs in the body.

According to Dr. Burton E. Sobel, Professor of Medicine and Director of the Cardiovascular Division of Barnes Hospital, "This technique offers the potential, for the first time, of non-invasively assessing the distribution of impaired metabolic function of heart muscle and the extent of diseased heart muscle."

This knowledge should permit physicians to intervene favorably in efforts to modify the evolution of the disease. This potential capability applies not only to patients who have had acute coronary episodes but can also be used as a screening tool for people with suspected coronary disease.

Although it is somewhat speculative, it appears likely to Dr. Sobel that "positron emission transaxial tomography will pave the way for definitive diagnostic studies to delineate and recognize conditions that are currently difficult to define clinically. Among these are alcoholic cardiomyopathy, the cardiomyopathy associated with diabetes mellitus, idiopathic (of unknown cause) disorders of heart muscle, and the presence of remote insults to the heart such as silent heart attacks which may be undetectable electrocardiographically or with conventional diagnostic procedures."

For these reasons, Dr. Sobel feels that it appears very likely that "positron emission transaxial tomography will receive wide utilization in the Coronary Care Unit of Barnes Hospital in particular and the medical community in general.

Plans are now being considered for a PETT V specifically designed for brain studies. The PETT concept is appealing to neurologists because it safely achieves quantitative regional metabolic measurements in the brain such as oxygen consumption, glucose metabolism, blood flow, and blood volume. The PETT can answer questions about metabolism of tumors of the brain and how they affect the integrity of the brain.

"The thing that's crucial here," said Dr. Marcus Raichle, Associate Professor Neurology and Radiation Sciences, "is that many of the diseases which affect the brain (strokes, epilepsy, and a variety of acquired and inherited diseases) do so by affecting the metabolism. Prior to the PETT," said Dr. Raichle, "regional metabolic measurement studies were developed at and performed only at Mallinkrodt but the problem involved was that the studies had to be done in conjunction with angiography, thereby limiting the number of diseases which neurologists could study. With the development of transaxial tomography, the necessity of a carotid artery injection in metabolism studies was eliminated."

The PETT system also has the potential to unravel the many mysteries of normal brain function. "For example," said Dr. Raichle, "a relatively new finding in neurology is that the regional metabolism of the brain changes dramatically in people during a variety of normal activities such as reading, talking, and walking, and so, for the first time, we can look forward to new information on how the brain is functioning in a normal human being."

Thus, it appears promising that the unique characteristics of positron emission transaxial tomography will continue to produce exciting and innovative clinical advances in the field of nuclear imaging.
Dr. Robert G. Levitt Receives Picker Scholarship

Dr. Robert G. Levitt has been selected a 1977 Scholar by the James Picker Foundation - an award representing a major achievement in his radiology career. Completing his diagnostic residency at the Institute on June 30, 1976, Dr. Levitt has remained on the staff as an assistant professor in radiology and continued his research projects begun in November, 1975, involving computed tomography (C.T.). In answer to physicians and consumer groups who questioned the cost-effectiveness and marginal utility of CT scanning, Dr. Levitt devised a computer assisted method to evaluate the diagnostic and clinical efficacy of CT scanning. Dr. R. Gilbert Jost (1975 Picker Scholar) and Mrs. Nancy Levitt assisted with and implemented the study. “Our object,” said Dr. Levitt, “is to prove the clinical efficacy of CT to the government, third party payers, and to consumers (patients).

An extensive evaluation of CT scanning at Mallinckrodt Institute has shown that brain and whole body scanning can provide an accurate diagnosis while saving the patient money and time in the hospital by obviating invasive diagnostic procedures or exploratory surgery.

Mallinckrodt is the only institution doing such wide-scaled research and this study provides some of the first solid data which can be used by medical personnel along with health and governmental agencies to make decisions on whether or not CT scanners are justified, and, if so, how many in a given population area.

“The first step, in our research,” said Dr. Levitt, “is to store information obtained from the scan of each body CT patient in the Mallinckrodt computer. When the patient is discharged from the hospital, we review the patient’s chart and record the final diagnosis, pathologic proof of diagnosis, and his conventional X-ray results. Out-patient information, also stored in the computer, is obtained by a follow-up questionnaire sent to the patient’s physician. Computer retrieval programs are then used to determine the diagnostic accuracy of CT scanning in a given disease, also, to determine the accuracy of CT scanning compared with standard X-rays. “By these methods we can determine in which diseases CT scanning is significantly more accurate than conventional X-rays,” said Dr. Levitt, “and these are the diseases in which CT scanning should be used as the primary radiologic modality.”

“We are finding that there are specific parts of the body in which CT scanning can provide the most accurate diagnosis at the lowest cost to the patient,” said Dr. Levitt.

The James Picker Foundation grant will be used by Washington University Medical School over a four year period to assist Dr. Levitt, who is 31, in his continuing research, self-development, and advancement as a member of the faculty. He also plans to further develop the team concept between radiologists and the other medical specialists in caring for the patient.

Dr. Levitt attributes interest in this project to his early research experience with Dr. Ronald Evens, Dr. Robert Stanley and Dr. Stuart Sagel, who, in addition to Dr. Gilbert Jost, and Mrs. Nancy Levitt, are members of a major CT scanning study team at Mallinckrodt Institute.

A member of Phi Beta Kappa and Alpha Omega Alpha, Dr. Levitt received his M.D. from the University of California School of Medicine at San Francisco and served his medical internship at Barnes Hospital. Dr. Levitt had planned to return to his home state of California at the end of his radiology residency but after meeting Nancy Hirstein, R.T. at Mallinckrodt, he changed his mind. The couple were married in September, 1975.

In April, 1977, Dr. Levitt addressed a Congress in London honoring the 400th anniversary of the birth of Dr. William Harvey, the discoverer of the circulation of the blood. He spoke on “The Clinical Efficacy of CT Scanning.”

Dr. Levitt is the fourth Picker Scholar to be selected from Mallinckrodt Institute. The distinguished group includes Dr. Ronald Evens, 1970; Dr. James Potchen, 1966; Dr. Gilbert Jost, 1975; and Dr. Robert Levitt, 1977.
DIVISION OF RADIATION ONCOLOGY REPORTS:

by Mary Jo Tillman

PROFESSIONAL HONORS

James A. Purdy, Ph.D., has been appointed to the RTOG Medical Physics Committee and Glenn P. Glasgow, Ph.D., to the RTOG Quality Control Committee. Aly Razek, M.D., was appointed to the Radiotherapy Committee of the Southwest Oncology Group at the January meeting in Houston. Don Ragan, Ph.D., is a member of the Radiation Oncology Studies subcommittee on the use of Computerized Tomography in Radiation Therapy. C.A. Perez, M.D., has been appointed a member of the Committee on Radiation Oncology Studies, National Cancer Institute.

PHYSICS SECTION PRESENTATIONS

The following were presented at the American Association of Physicists in Medicine/Missouri River Valley Chapter meeting, Kansas City, Kansas, February 19.


“Combining Implant and External Radiation Doses on a Computerized Treatment Planning System”, Dana Sawyer and Helen Fotenos, M.S.


“Scatter-air Ratios and their Application to Dose Distribution”, Satish C. Prasad, Ph.D.

“A Parallel Plate Ionization Chamber for Dosimetry of Photon and Electron Beams”, David J. Keys, M.A., and James A. Purdy, Ph.D.

“The Exposure Rate Constant of $^{192}\text{Ir}$”, Glenn P. Glasgow, Ph.D.

“Quantification of Accuracy in Radiation Treatment”, Walter J. Kopecky, Ph.D.

“The Role of the Engineer in Radiation Therapy”, Peter A. Parrino, M.S.

“Photons vs. Electron Beam Energy Response for LiF Impregnated Teflon Disc Thermoluminescent Dosimeters”, Hollace L. Cox, Ph.D., Glenn P. Glasgow, Ph.D., and Myung C. Choi, M.S.

“Effects of Motion on the Radiological Image”, Satish C. Prasad, Ph.D.

“An Overview of Current Hyperthermia Research”, Walter J. Kopecky, Ph.D.

MEETING PARTICIPANTS

Dr. Carlos A. Perez presented a series of lectures on various aspects of cancer and radiation therapy at the following meetings:

- The Gilbert H. Fletcher Society, Houston, February 19th.
- The 12th Annual Akron City Hospital Cancer Symposium, Akron, Ohio, March 23-24.
- California Hospital Medical Center’s annual symposium on Cancer of the Ovary, Los Angeles, March 25th.

Dr. Bruce J. Walz gave a talk before the Cole County Cancer Society: “Role of Radiation Therapy of Carcinoma of the Urinary Bladder” January 27.

Dr. Carlton C. Stewart participated in a panel discussion on “Glucan and Macrophages” at the 13th National Meeting of the Reticuloendothelial Society in New Orleans, December 17, 1976. He was also interviewed by two New Orleans television stations: WVUE and WDSU.

ATTEND MEETINGS


Mary Jo Tillman attended a TOXLINE training course at the National Library of Medicine, Bethesda, Maryland, March 2-4.

CANCER WORKSHOPS AT MALLINCKRODT INSTITUTE

Screening and Early Diagnosis of Breast Cancer, Jan. 24.

Carcinoma of the Endometrium, February 24 and March 31.

VISITING FELLOWS

Cesar Chiafitelli, M.D. from Centro de Oncologia e Radioterapia, Rio Grando do Sul, Brasil, November 3 - December 3, 1976

J. Stewart Whitmore, M.D. from Deweese Radiologic Group, Inc., Kansas City, Mo., December 13 - 17, 1976

John M. James, M.D. from Florida Hospital, Orlando, Fla., March 14 - 18, 1977
T'Was A Merry Christmas!
Dear Mallinckrodt Staff, Employees, Alumni, and Friends:

We have received numerous requests for an “iron-on” insignia for the Mallinckrodt Institute of Radiology; therefore, we are submitting the one below for your consideration.

The purpose of the symbol would be to establish a definite logo for the Institute and to identify our Mallinckrodt personnel by its use on all uniforms and white coats.

I invite your comments, including suggestions concerning appropriate colors and any other uses for the emblem you might offer. Please take a few minutes and send your comments today. Just detach this enclosure, fold, staple and mail or place in my mailbox.

Thanks for your help.

Ronald G. Evens, M.D.
Return Address:

Ronald G. Evens, M.D.
Director
Mallinckrodt Institute of Radiology
510 S. Kingshighway
St. Louis, Missouri 63110
Help Keep FOCAL SPOT Informed of Your Activities

Dear Alumni:

To help us keep your former house officers or faculty and friends apprised of your achievements, we would appreciate your taking a few minutes to fill out the following questionnaire.

Name
Address
Recent activities (publications, promotions, etc.)

Honors, fellowships, medals, honorary degrees

Major field of research or study

Special interests

Please fold, staple and mail.

We also appreciate receiving photographs and press clippings.
Return Address:

Ronald G. Evens, M.D.
Director
Mallinckrodt Institute of Radiology
510 S. Kingshighway
St. Louis, Missouri 63110
Dr. Ronald G. Evens
Named ACR Fellow

Dr. Ronald G. Evens, Director of Mallinckrodt Institute, has been cited for distinguished medical achievements by being named a Fellow of the American College of Radiology.

The College, a professional medical society representing about 12,000 physicians who specialize in radiology, awarded Dr. Evens a certificate of Fellowship during its 54th annual meeting and Convocation in Houston, Texas, April 17-22.

Those honored as fellows earned their rank through scientific accomplishments in the field of radiology, the performance of outstanding service as a teacher, and by their acceptance as leaders in their specialty.

Delivers Lecture

Dr. G. Leland Melson delivered two lectures on computed body tomography to the staff of the Penrose Cancer Hospital, Colorado Springs, Colorado on March 16 and 17.

The Director's Office Reports:

Off Staff

Dr. John V. Forrest has joined the staff at the University of California (Veterans Administration Hospital), San Diego. He was an Associate Professor of Clinical Radiology prior to moving to California.

Dr. Federico Reiter entered private practice with the Northwest Radiologists, Inc. in St. Louis on February 1.

Dr. Alvin Korba entered private practice with Radiation Oncology, Inc. in Evansville, Indiana on January 12.

Dr. Bernardus van der Zeijst, Research Associate in Cancer Biology, went off the staff on February 28.

Alumni News

Dr. Edda Q. de Sevilla ('75), and her husband, Angel R., announce the birth of their second son on December 27, 1976.

Back from Bombay

Tom R. Miller, M.D., Ph.D., came to Mallinckrodt in January, 1977, to begin his first postgraduate year in Radiology. He holds a B.S. degree from California Institute of Technology, a doctorate degree in nuclear physics from Stanford University, and in 1976 received his M.D. from the University of Missouri. After graduation from Stanford, Dr. Miller and his wife spent nine months in Bombay, India on a Fulbright Fellowship. He did physics research and Mrs. Miller, who is a musician and plays the cello, studied sitar with a guru. A sitar is similar to a classical guitar (has frets like a guitar) and is used for playing classical music. Mrs. Miller's happy experience as an exchange student in India led the couple to Bombay for their study. Dr. Miller shares his wife's appreciation of classical music and both enjoyed the active cultural life in Bombay. Now, they are enjoying Michelle Marie Miller, their five months' old daughter, and Mrs. Miller is studying for a Ph.D. in educational administration. The field of radiology will enable Dr. Miller to combine medicine with his past training in nuclear physics.

Upper right are Dr. and Mrs. Tom Miller in traditional Indian dress before attending a concert in Bombay. The unique feature of the sitar, played by Mrs. Miller, is that it has seven strings, which are plucked, and eleven underlying strings tuned to the same notes and harmonics. When one of the seven strings is played, the lower ones vibrate sympathetically. The Indian guru provides tabla (two drums) accompaniment.

Honored

Dr. Lily A. Hanes is the first woman to be elected Vice Speaker of the House of Delegates of the State for the Missouri State Medical Association. She was elected in April 1977 for a three year term.

Virginia Trent was recently appointed to the Board of Directors of the St. Louis Chapter, International Association of Business Communicators.
In January the Division of Nuclear Medicine conducted five workshops at the National Meeting of the Society of Nuclear Medicine, Technologists' Section, in Las Vegas, Nevada. Those participating in the workshops included Barry A. Siegel, M.D., Donald R. Bernier, R.T., Francine Schaffner, R.T., Charles Gugger, R.T., and Ed Coleman, M.D., Director of the Division of Nuclear Medicine, University of Utah. Dr. Coleman was formerly with MIR.

Donald R. Bernier, R.T., technical supervisor of the Division of Nuclear Medicine, has been selected as a site surveyor for Nuclear Medicine technology training programs by the AMA.

New students in the Division of Nuclear Medicine for the 1977-78 class have been chosen. They are Wayne Guthrie, Martinsville, Indiana; Leon Williams, Fort Smith, Arkansas; and from St. Louis, Missouri, Daniel Kleypas, Christine Lombardo, and Samuel So.

**NEW MOBILE CAMERA**

The Division of Nuclear Medicine has acquired a mobile gamma camera, the Searle L.E.M. (low energy mobile). Currently being used to perform myocardial infarct and lung scans on patients in the various Coronary Care Units, the new camera permits usual continuous monitoring while Nuclear Medicine procedures are performed. The advantage of using a portable camera, such as the L.E.M., is that acutely ill patients can be scanned without being transported to Nuclear Medicine.

Francine Schaffner, R.T., uses the L.E.M. to perform a lung scan in the Coronary Care Unit.
Videography is a dynamic and versatile communications medium which incorporates sound, picture, film slides, audio tape, graphic art, records, and special effects. Its use by Helen Pares and Norman Hente at Mallinckrodt Institute represents an additional link between health professionals and a new effort to facilitate education for all.

In 1974, a whole new dimension in videotaping was added with the acquisition of two videocassette recorders and a color camera. “These recorders, Sony ¾” U-Matic Model VO 2850, offered superior quality and ease of handling,” said Pares, “and, combined with the Sony RM 400 Electronic Editor made possible editing control similar to that enjoyed by the film producer. The addition of titles, program inserts, overdubbing (narration), splicing of different tapes, and duplicating all became possible.”

According to Hente, “The color camera, Sony 5000BP, with a 6:1 television zoom lens and a Plumbican tube is primarily a studio camera with mobile capability. This unit also represents the ‘state of the art’ and is the only real choice between less sophisticated cameras and the broadcast camera used by local television stations.”

An ever increasing number of uses have already been made of the equipment. The first area was documentary material from Cancer Workshops. Designed as community outreach productions, the workshops will be videotaped on a continuing basis. A training tape made to instruct Radiation Oncology technologists in the operation of the interactive computer scheduling system suggests future uses in training and orientation of personnel. Special lectures are videotaped for didactic purposes. A videotape of a comprehensive 15 hour continuing education course on computed tomography of the entire body provides a dynamic teaching tool in the CT visiting fellowship program for practicing radiologists. A reference file of broadcasting media interviews by Mallinckrodt clinical and research staff members is being accumulated, and only recently a presentation film was produced for site visitors.

“With the acquisition of a second color camera, a special effects generator, and a variety of specialized interfacing equipment,” said Hente, “we are now able to produce programs that are exceeded in quality only by broadcast television.”

All of the multi-media production work before and after location taping is done by Pares and Hente in a studio on the tenth floor. Two playback units are in use, one in the first floor Oncology Division conference room and one in the eighth floor library, and more are in the planning.

“With our additional equipment, we’ll have a sophisticated video studio,” said Pares, “enabling us to provide a resource agency covering a wide spectrum of educational activities.”
"Great To See The Finish Line"

by James P. Blakely, M.D.

The modern marathon, as it is run at the Olympics, in Boston, St. Louis and in over 200 contests within the United States, is a standard distance of 26 miles, 385 yards. The St. Louis Marathon, closely following the course of the 1904 Olympics held in this city, started at Washington University’s Francis Field, passed through several St. Louis suburbs and finished at the Rodeway Inn, near downtown.

I recall the event as if it were yesterday. Dressed in longjohns, mittens, and a ski cap, I was amply prepared for the 32° weather. Snow was on the ground but fortunately did not cover the roads. Most of the 410 runners awaiting the starting gun were quiet, saving their energy for the task ahead. We were off! The few “Olympic-class” runners started at the front and progressively lengthened their lead throughout the race. The majority stayed in a pack which slowly spread out throughout the first several miles, each person finding his own pace. At the five mile point, I was two minutes ahead of my predicted time.

By the time we entered Warson Woods, the muscle behind my right knee became slightly stiff and did not want to extend fully. My right knee cap became bothersome. While still on the run, I was given small cups of drinking water and an electrolyte replacement...
solution in one of the several aid stations. In Ladue and Creve Coeur, my discomfort behind the right knee grew worse.

At the half-way point (13.6 miles), I wondered if I would finish. Four of my closest friends and my fiancee, Mary, were there to give me moral support and, occasionally, fluid. Small crowds of people, on both sides of the road, applauded as I ran. They did that for everyone. Mysteriously, in Olivette, the pain and stiffness in my right leg subsided and a feeling of fatigue began to set in. Throughout the race my energy increased at certain points which corresponded to my mental reconstruction of the “Ode to Joy” section of Beethoven’s Ninth Symphony. The melody seemed to bring on a visceral response allowing me to go faster for a short distance.

Entering University City I met a long hill up North and South Road. The fatigue increased and at the 19th-mile mark I had slowed down to a “jogging” pace. I wanted to stop. I could imagine the glycogen (the fuel the body uses to keep going) drying up like a mud pond in a drought. Generalized pain and fatigue became worse in Clayton. At the 21-mile point I stopped and walked for a short distance wishing the pain would go away. It didn’t. I slowly started off again. Only five more miles I told myself as we finally entered the city limits. I was now very slow and the first woman runner passed me. A couple of miles later Julio Happa passed me. Julio works in the Pathology Department at Barnes Hospital and is over fifty years old. He never complains. As I kept going, the “rigor” set in. The muscles in the back part of my legs became rigid and shorter as if someone were tying a knot in them. Three hours had elapsed since the start. At 24 miles I could see the Arch and knew the finish line was near. This “smell” of the finish line released my final stores of adrenaline and I ran faster than I did at the start of the race, passing at least a dozen runners within the last two miles. The finish line was a most welcome sight. My final time was 3 hours, 53 minutes, and 20 seconds. This was meager compared to the winning time of 2 hours and 20 minutes. I felt great but sore as I embraced my friends and fellow runners.

There are many reasons for running. My main motivation comes from the joy of running. Fitness is a beneficial side effect. My resting pulse rate and blood pressure are lower; I am thinner and feel better. Since I started running two years ago, it has become a way of life. One certainly need not run a marathon to remain fit. The joy may be obtained from regular running whether for five minutes or an hour. I encourage everyone to, at least, try it.

A Year in The Netherlands

In September, 1976, Dr. Mark Edelstein, Instructor in Cancer Biology in Radiology, returned from a year’s post-doctoral fellowship spent working on combination chemotherapy and the effects of chemotherapy on bone marrow at the Radio-biologic Institute in the Netherlands. His major project involved working with Dr. L. M. van Putten on examining the mouse hematopoietic stem cell in both a resting and proliferating state in order to determine the schedule dependence of the toxicity of combination cancer chemotherapy to bone marrow.

In a clinical situation, a patient’s bone marrow cells are largely “resting” at the beginning of therapy, but because of toxicity to immature blood cells, the bone marrow begins to proliferate in order to replace those cells lost. In this process, it becomes more sensitive to presently available anti-cancer agents. “The work,” said Dr. Edelstein, “using proliferating bone marrow cells, allowed a precise analysis of toxicity to be made and took advantage of the expertise of the Dutch group’s experience in working with bone marrow cells.”

Mrs. Edelstein studied violin with Herman Krebbers, an outstanding concert violinist and teacher. Taking the smooth, flat bike paths which are as prevalent as sidewalks, the couple visited Leiden, Delft and the Hague on bike and spent a weekend on a combined camping and sailing trip in the North of the Netherlands just before returning to St. Louis.

“Our travels in Europe stretched from Oslo, Norway, for a World Health Organization meeting to Cairo, Egypt, simply for fun,” said Dr. Edelstein.

“We lived a quiet Dutch life style. I rode a bike four miles each way along the beautiful canals, as did my wife to do her shopping. While supermarkets do exist, each Saturday morning we shopped in our town’s farmers’ market - buying fresh fruits and vegetables and farm-made cheese. We also had the chance to skate on the canals in the winter and skating in a straight line for miles is much more fun than going around in circles in a rink. Their ‘hottest summer ever’ seemed mild compared to St. Louis - we welcomed it.”
The redecoration of the Radiation Oncology area on the ground floor is proceeding at a steady pace. All areas are newly painted and redecoration is underway in the treatment rooms.

Above, green and white print wallpaper on some walls and white textured wallcovering on others lends a cheerful atmosphere to the waiting room. Doors leading to the stairs and the treatment area pick up the green motif as does the new green and orange blend carpeting. The couches will be re-upholstered in orange.

Right, the Division's most recent treatment planning acquisition, a second simulator, is now housed in a newly decorated light-blue paneled room with a small treatment planning anteroom.

Left, all the hallways have received a new coat of off-white paint with orange accents, and the hallway nursing cabinetry has been painted in bright accent colors. The new treatment chart racks for the Clinac 4, Cobalt 60, Betatron and Clinac 35 were built by Roy Ragan and his staff, using material and colors chosen to coordinate with the general theme.
On Saturday night, April 2, the family of Dr. Michael Gornish, second year resident at Mallinckrodt, began their observance of the festival of the Passover in their traditional Jewish home. This holiday, which lasts eight days, commemorates the sparing of the Israelite first-born and the escape out of Egypt. The name also refers to the passing over of the Israelites from slavery to freedom.

In the month before the holiday, the Gornish house was thoroughly cleaned to get rid of even the smallest crumb of any leavened grain products or baked goods containing yeast or other substances to make them rise. All utensils used during the year were put away and ones used only for Passover were brought out after cleaning shelves, counters, and cooking areas.

The first two nights of Passover, which usually falls between mid-March and mid-April, have a special festive, ceremonial meal called the Seder (meaning “order”). This tradition is a time for families and relatives to gather as they did over 3400 years ago when the Jews in Egypt were instructed to assemble their families in their homes and eat a meal consisting of roasted lamb and unleavened bread. They were to be dressed, ready to travel at midnight, at which time they began the Exodus and a trek which would lead them to Mount Sinai and the land of Israel.

A great deal of attention is directed toward the children in the ceremonies and symbols of the Seder. They are encouraged to question the significance of each symbol and each part of the Exodus story. The most pervasive symbol is the “matzah.” The bread of affliction eaten by Israelite ancestors, the matzah is a flat, cracker-like bread made only of flour and water. The Passover festival is sometimes called

For the Passover Service Dr. Gornish is dressed in the white robe and yarmulke (skullcap) worn by the men in a traditional Jewish home. Mrs. Gornish covers her head in humility before God. Shlomo, their 1½ year old son, also wears a yarmulke.

The Passover table below contains the matzah, symbolic foods on the Seder plate, wine, and lighted candles which are a part of every Jewish holiday.
the “Feast of the Unleavened Bread” because the Israelites hastily baked matzahs before they left Egypt. With the matzah, a Seder plate is on the table containing a number of symbolic foods: bitter horseradish, a reminder of the tears; salt water for dipping vegetables to remind of the bitterness of slavery; charoseth, a concoction of apples, wine, nuts, and symbolizing the mortar used by the slaves in building; a shank-bone commemorating the lamb eaten at the original pre-Exodus meal and the yearly Passover sacrifice brought in biblical times; an egg representing the festival offering.

Four cups of wine are drunk during the meal. Each one is associated with a prayer of thanksgiving. After the prayers and the retelling of the Exodus story, a festive meal, with many courses, is served and the Seder ends with songs celebrating the joys of the holiday.

“The events of Passover are integral to Judaism,” said Dr. Gornish. “The Hebrew tribes had been assimilated into the Egyptian culture and with the Exodus, this group of common ancestry was slowly forged into a nation with its own spiritual and moral values- above all, a belief in one, unseeable Deity.”

In Memoriam

Dr. Oscar Charles Zink died on January 10, 1977 in his 79th year. Born in Belleville, Illinois in 1897 and graduating from Washington University School of Medicine in 1921, he was appointed Assistant in Surgery (Radiology) on August 1, 1922 and as such was the first resident of Dr. Sherwood Moore, the distinguished Professor of Radiology whose foresight was responsible for Mallinckrodt Institute of Radiology.

In 1925, upon completion of his radiology training, Ozzie was appointed Director of Radiology at St. Luke’s Hospital and at this time began a pattern that was to last for the next 30 years, combining his work at St. Luke’s in the morning and devoting himself to Mallinckrodt Institute of Radiology in the afternoons, first as the Radiation Therapist and later as Senior Consultant in uroradiology.

Retiring from St. Luke’s in 1955, he devoted himself to teaching at Mallinckrodt Institute of Radiology. Highly regarded as a teacher by residents and medical students, his daily afternoon sessions in urodiagnosis was always SRO—both because of knowledge and his sense of humor.

He was granted the permanent title of Assistant Professor Emeritus of Clinical Radiology on July 1, 1966. He was a member of the American College of Radiology, the American Medical Association, the American Roentgen Ray Society and the Radiological Society of North America. Although his scientific writings were mainly on cholecystography and radiation therapy, he worked closely with early investigators in the early 1950’s in the development of the newer urographic contrast agents then being developed.

Ozzie learned to play the accordian, and loved to entertain for friends and residents. Also an accomplished bridge player, he constantly looked forward to his weekly battles. But the thing he liked best was “jawboning,” talking with everyone and everybody. Never without advice or comment, he was always admonishing— “Pull on this or just push that.”

Never one to say and not do, he succumbed one snowy day in January pulling and pushing on a snow shovel. Many of his older colleagues have moved on, but to those of us he trained, he’ll always be around.

He leaves his devoted wife and companion, Catherine, and son Charles, a radiologist in Jacksonville, Illinois.

Sumner Holtz, M.D.
Associate Clinical Professor of Radiology
MSRT 4th District Student Presentation

“Computerized Tomography of the Total Body” was presented at the 4th District meeting in February by technology students, from left, James Valenti, Carol Wilcox, Robert Grbac, and Thomas Hanson.

CAVING

Bob Ronecker, R.T., Technical Supervisor of Queeny Tower, has always been interested in caves, and, recently he decided to join a local club (called a “grotto”). As a part of the National Speological Society the grotto’s purposes are to promote safety in caving and conservation of cave life, protect caves from vandalism, and provide information about new cave discoveries and cave life populations.

“The club visits a cave every Sunday all year round,” said Bob, “and, since Missouri has over 3000 known caves, I needn’t worry about running out of places to visit. My crawling through mud and water is rewarded by finding indescribably beautiful formations of limestone and onyx that took thousands of years to form.”

Cave temperatures remain around 60° year round so Bob’s hobby can be enjoyed in any weather. His equipment consists of a hard hat, high boots, old clothes, gloves, carbide lamp, flashlight, candles, matches, and camera.

“I enjoy caving because of the excitement of the unknown and the teamwork shown by the cavers towards each other,” said Bob.

Psychosocial Aspects of Cancer Treatment

On February 4 and 5, Dr. Carlos A. Perez and Laurie Braun, social worker in Radiation Oncology, attended a conference at the Columbia Presbyterian Hospital in New York City. The conference, entitled “Psychosocial Aspects of Radiation Therapy,” was organized under the auspices of the Foundation of Thanatology, which includes the psychological aspects of death and dying.

Many of the speakers addressed the issue of stress for the patient and family who are experiencing the crisis of cancer and the need for treatment.

Several physicians addressed their own limitations and needs to humanize medicine so that they can respond to patients’ problems and can use ancillary members of the health care team appropriately. (A central theme of the conference was that of living with cancer.)

Dr. Carlos Perez, Dr. Lily Hanes, Laurie Braun, MSW, and Nell Sedrank, Ph.D., co-authored a paper which was presented at the meeting. Representing an initial inquiry and evaluation of the psychosocial aspects of cancer and radiation therapy, the paper was based on information from a questionnaire designed to evaluate what patients know and how they feel about their illness and radiation therapy and what they want to know about it.

To date, an analysis of sixty questionnaires completed by Mallinckrodt patients reports many patients have feelings of anxiety and depression. Most of the patients report they are getting the information they want from their physicians about their illness and radiation therapy. However, it was found that patients have concerns they are not able or willing to share with their physicians or that physicians do not recognize the psychosocial aspects of the patients’ illness.

Technology Seminar

The first Radiation Therapy Technology Seminar to be conducted at Mallinckrodt Institute was held on March 5. Coordinated by Ms. Bettye James, R.T.T., the program speakers included Glen Glasgow, Ph.D., Steve Schaffner, R.T.T., and Ms. James.

Virginia Trent participated in the 1977 Editors’ Workshop at Oklahoma State University, March 28-31.
Volunteer

MIR thanks Mrs. Christine McDonald, Barnes Hospital volunteer, who devotes her weekly volunteer hours to delivering radiology pamphlets to patients from Queeny Tower to East Pavilion. She joins other volunteers, Mary Ann Fritschle, Adele Kilgore, and Barbara Butler in her concern and assistance toward better health care for our patients.

Calendar
May 9, 1977
CITY WIDE RADIOLOGY CONFERENCE
Scarpetino Auditorium, Mallinckrodt Institute, 5:30 P.M.

May 19, 1977
4th DISTRICT M.S.R.T. MEETING
Cardinal Glennon Hospital, 8 P.M.

September 27-30
AMERICAN ROENTGEN RAY SOCIETY
Boston, Massachusetts

October 6-8
MISSOURI SOCIETY OF RADIOLOGIC TECHNOLOGISTS
STATE CONVENTION
Hilton Plaza, Kansas City, Missouri

October 23-29
XIV INTERNATIONAL CONGRESS OF RADIOLOGY
Rio de Janeiro

From The Editor

Mallinckrodt Institute has long understood the importance of individualized attention for each patient and it should be our continuing goal to help provide it. For example, cancer requires adjustments beyond those associated with other diseases. For this reason the staff of Radiation Oncology must help patients with problems obtain the treatment they need for life itself. The Division social worker steps in to do whatever possible to take pressure off the patient, constantly remaining alert to social and emotional problems that may interfere with medical care or rehabilitation. The loss of a job, disruption of the home and emotional reactions to radical and disfiguring treatment are often crucial hurdles that the worker must help the patient and his family overcome.

A volunteer person working in the clinical area provides another dimension of patient relations: i.e., someone other than staff to whom the patients can relate with their questions and concerns.

A new revised patient information handbook is given to each patient treated by radiation therapy. The aim of the new book is to make the experience less frightening by explaining what radiation therapy is and how it affects the body. It takes the patient through the various steps in the treatment process and describes the treatment machines and the personnel who work together during all stages of treatment.

In another area of patient information, radiology pamphlets involving 20 different diagnostic, nuclear medicine, ultra-sound, and computed tomography procedures are distributed daily to patients in the hospital, clinic, and out-patients. The pamphlets describe the X-ray examinations, and in some instances, explain the necessary preparation.

After we, the staff, have worked in the medical setting for awhile, it becomes difficult for us to understand the impact all our machines and all our personnel have upon patients who are not accustomed to the same surroundings.

In the hope that many patient concerns can be handled preventatively, a future project at Mallinckrodt will be to produce an orientation film for oncology patients. This medium will be yet another thrust toward helping our Institute prove that medicine can be humanized without losing any of its scientific value. . . .that there is no incompatibility between compassion and institutional specialization.