On the Cover:
Linda James is one of the children participating in Hand in Hand, a program offering rehabilitation to children with developmental disabilities and educational sessions to the parents.
The Mallinckrodt Institute of Radiology provides the resources and space necessary to bring together clinicians, scientists, teachers and patients in order to continue to develop better radiological services for the nation’s health needs of tomorrow.

Beginnings were difficult

In 1981 the Mallinckrodt Institute of Radiology (MIR) will celebrate fifty years of existence. Over these past forty-six years, the Institute has gone from being practically non-existent to becoming an internationally known diagnostic and treatment center with monumental research and teaching responsibilities.

Reaching this stage was not an easy task, for in the early 1920's radiology was not even a recognized discipline. According to Ronald G. Evens, M.D., Elizabeth E. Mallinckrodt Professor and Director of the Mallinckrodt Institute of Radiology, Mallinckrodt owes its beginnings to three things: Dr. Evarts Graham, the Edward Mallinckrodt family and the gall bladder.

"Dr. Graham, who was then head of the department of surgery, became frustrated with medicine's inability to diagnose gall bladder disease," Evens says. "Graham became aware of certain biochemical investigations which suggested there might be a way to visualize the gall bladder by x-ray. This had never been done before, and he began a series of investigations in animals with Dr. Sherwood Moore (who at that time was the only radiologist here) and Drs. Warren Cole and Glover Copher."

Evens points out that in those days radiology was a part of surgery. In fact, Dr. Moore was considered a radiologist only because of on-the-job training rather than the formalized training one must go through today.

"Along with Dr. Moore, Dr. Graham recognized medicine's need for x-ray techniques and their potential usefulness in making diagnosis. Graham also requested help from Edward Mallinckrodt, Sr., an industrialist and generous philanthropist. He asked Mr. Mallinckrodt for some help from his chemists at the Mallinckrodt Chemical Works."

Mr. Mallinckrodt agreed and a program was begun which took several years to complete and resulted in the discovery of a compound which could be given to patients. "This iodine containing compound," Evens says, "would concentrate in the normal gall bladder, and allow the gall bladder to be identified in an x-ray. Through this technique, gall bladder disease was able to be diagnosed before surgery."

According to Evens, this discovery was a major breakthrough, "for the first time it was shown how knowledge from pharmacology, biochemistry, physiology and radiology could develop a major diagnostic technique. Graham and the group he worked with received a great deal of well-deserved credit for this discovery."

After this discovery, Graham decided to work very hard to promote radiology as a recognized specialty and to establish an institute of radiology at Washington University School of Medicine. Graham first agreed to allow radiology to become a separate department outside of surgery.

"Secondly," Evens says, "Graham and W. McKim Marriott, who was then Dean of the Medical School, went to the Rockefeller Foundation and asked for support. The Rockefeller Foundation agreed to endow an institute of radiology, the first ever to be established. However, a proviso went with the endowment that none of the money be used for construction."

Obviously with this proviso only half
the battle had been won. There was now money for research, but no place in which to conduct it.

"Consequently," Evens says, "Dr. Graham and Dean Marriott returned to St. Louis and asked Edward Mallinckrodt, Sr., for the funds to actually build a structure that would house an institute. Mr. Mallinckrodt agreed and the first cornerstone was laid in 1930 with the building dedicated in 1931. So, MIR's beginning was a combination of Evarts Graham's ingenuity, the support of the Rockefeller Foundation, and the generosity of the Mallinckrodt family. They all came together to construct a building which would eventually become the Mallinckrodt Institute of Radiology."

What they built was a nine story building, which was unique then and still remains so. At that time, the radiology department at Washington University School of Medicine expanded from two rooms in Barnes Hospital. "Obviously," Evens says, "all of this space was not initially occupied. But with the dramatic growth in the 30s and 40s, this space allowed the department to grow. So, fortunately, our founders were blessed with foresight."

Sherwood Moore, M.D., a radiologist who worked with Graham from the beginning, became the first Director of the Mallinckrodt Institute of Radiology.

"Even though MIR has been in existence for nearly 50 years," Evens says, "there have only been four directors. Sherwood Moore was the first director from 1931 until 1949. Hugh Wilson, M.D., who trained at MIR and was then the first chairman of radiology at Yale, was asked and agreed to return and be the second director. Wilson was director from 1949 until 1965. Juan Taveras, M.D., who was in charge of radiology at the Neurological Institute in New York City, was MIR's third director from 1965 until 1971. And in 1971 I was asked to become the fourth director."

Evens says in the early years of Mallinckrodt there were no specialty divisions. For the first few years of its existence, Moore and a handful of other radiologists did a little bit of everything.

"There was no radiology specialization anywhere, not just here," he says. "We were one of the very first radiology departments in existence to be separated from surgery or medicine. In most places radiology was a small hospital department without the academic status of older specialties.

"Many of the specialty divisions we now have were not even thought of in the 20s and 30s. There was some radiation therapy, but certainly no nuclear medicine, ultrasound, or angiography."

But the founders of MIR knew the field of radiology would someday expand and specialize and they planned the new department for the changes that were to come.

Today—MIR rates worldwide recognition for patient care, teaching, research

From its humble beginnings nearly fifty years ago, the Mallinckrodt Institute of Radiology has attained a unique position nationally and internationally. According to Evens, there is no other radiology institute in the world which combines clinical, teaching and research responsibilities.

Over the years, Mallinckrodt has obviously accrued all the responsibilities of an academic department—and on a very large scale. According to Evens, Mallinckrodt's clinical responsibilities come first.

"People come to us to get the best possible radiographic examination. Our academic responsibilities require excellent people in teaching and research. But at the time of a person's chest x-ray, the patient doesn't care about those aspects at all. They simply want the best x-ray possible; so our first responsibility is clinical."

The Mallinckrodt Institute handles all of the radiology for Barnes Hospital, Children's Hospital, the Washington University School of Medicine clinics, and a large number of private physicians.

"Most of our patients are from the St. Louis area," Evens says, "however, for some of the more specialized testing we get patients from other areas. For example, since body computed tomography has been in existence here, we've had people come from all over the world. We recently had a patient come from Finland for a study."

Last year alone Mallinckrodt did over 250,000 diagnostic x-rays. That figure is even more impressive when one realizes that on a typical working day more than 1,000 patient x-rays are done.

"We perform the x-ray examination, interpret it, give the results to the patient's physician, and store that x-ray for future reference. Last year radia-
tion therapy treated more than 1,300 cancer patients. That means there were more than five new patients every day who came to us for that treatment. We also performed approximately 10,000 nuclear medicine studies. Obviously we work in very large volumes and have tremendous responsibilities to our patients.

As an academic institution, Mallinckrodt also has large teaching responsibilities.

"In many respects, I think, teaching is what makes us so unique," Evens says. "Every year we train ten diagnostic radiologists, two radiologists with a specialty in radiation therapy and two in nuclear medicine. We also train 20 diagnostic x-ray technologists, five radiation therapy technologists and four nuclear medicine technologists each year. Practically every medical student spends time in radiology, and we have several students who are obtaining graduate degrees in physics, cancer biology or computers."

Most of the radiologists trained at Mallinckrodt enter private practice, but about one-third enter academic areas in which they continue to teach and do research.

In the early days of radiology, radiologists did a little bit of everything. This would be impossible today with the many technical advances in the field and the spectrum of specialties radiology now encompasses.

"For example," Evens says, "our trainees in radiation therapy have spent all or most of their time in therapy and very little time in diagnosis. In the past it was possible to train a radiologist in radiation therapy in only one year. Presently, with all of the different types of equipment required to treat different types of patients, three years of training is necessary. If we wanted to train radiologists to be capable in all specialty areas, they would be training for the rest of their lives. So, obviously, training in limited areas has become necessary."

In addition to clinical and teaching responsibilities, all of the specialty divisions in the department have a research responsibility. Evens says a major Mallinckrodt research interest lies in the development of new equipment used in diagnosis.

"A second major research area is in radiation oncology, investigating the reasons why x-ray and chemotherapy kills cancer cells and how they can be used in combination to improve cancer treatment."

Mallinckrodt has also done extensive research into the use of computers for diagnosis, treatment and administrative purposes.

"Computers are required to keep track of patient information since we have such an extremely high volume of patients and examinations," Evens says. "We've obviously gone past the day when we can have secretaries filing away pieces of paper."

### Four specialty divisions

The Mallinckrodt Institute of Radiology is organized along specialty lines with four divisions. They are: diagnostic radiology, radiation oncology, nuclear medicine and radiation sciences. The first three divisions have varying clinical, teaching and research responsibilities. "For example," Evens says, "diagnostic radiology's major responsibility is clinical but our staff spends considerable time in teaching and re-

The Positron Emission Transaxial Tomograph (PETT) was designed, built and tested by a WU team.
search. On the other hand, radiation sciences is heavily research oriented with a secondary, but important, responsibility to teaching.

Diagnosis radiology

Diagnostic radiology is the largest clinical division, encompassing radiologists who are particularly interested in the chest, the musculoskeletal system, the abdomen, the neuro area, heart, and pediatrics. Unlike the other three divisions which have a division chief, Evens serves as the chief of diagnostic radiology with various section heads under him to encompass the many different specialties.

One of the busiest, and certainly the most colorful, diagnostic sections is pediatric radiology. Fred Flintstone and many other familiar cartoon characters smile down from the brightly colored walls. Pediatric radiology, located on the fifth floor of Mallinckrodt, is obviously a place which has been designed to please children and relax them while they are there as patients.

Gary M. Shackelford, M.D., associate professor of radiology and pediatrics, emphasizes the importance of treating children in a separate area. “It would be very frightening for a small child to be brought to a radiology department where there are adults towering over him, intravenous bottles, and no familiar sights. It is quite important to have a separate area which is bright and happy where children are examined,” he emphasizes.

Shackelford feels if the child is old enough to cooperate and reason with, every effort should be made to win him over and gain his confidence. “I feel it is important to spend extra time chatting with a child,” he says. “Ideally this should be done with every patient, but I think extra efforts should be made with a child. For instance, an adult is reasonable enough to know he has to take barium for an upper GI series whether or not he likes it.”

“The exam for the child was ordered without his knowledge and he understands nothing about it. Someone hands him a pink, strange smelling liquid to drink and he’s probably not very willing to cooperate.”

Shackelford says that on many occasions he has sampled the barium himself in order to gain the child’s confidence and show the child it doesn’t taste all that bad.

However, as Shackelford emphasizes, it is important to realize that because of the age or emotional make-up of a child, it is not always possible to reason with him. “When this happens,” he says, “restraints do have to be used for examining the child. This is usually necessary with the very young infant and through the early years of life.”

Mallinckrodt’s pediatric radiology division treats people up to the age of fifteen or sixteen. Infancy to young adulthood is a large age range to treat. “Physicians who handle adult radiology deal with the same size patients. We have to deal with a range of patients from small infants to mature young adults,” Shackelford says.

“If anything, our specialty requires even more exact equipment than that needed for adult radiology. We need to use very short exposures when dealing with children in order to arrest motion. Consequently, we have to have a powerful x-ray generator to produce high powered enough x-rays to allow for a very short exposure time.”

On occasion children have used the computed tomography body scanner. Shackelford feels with further technological advancement of the body scanner, it will be used even more frequently.

“It takes roughly 20 seconds for a single exposure on the scanner,” he says. “Most children, for obvious reasons, can’t suspend respiration or be immobilized for that length of time.”

There are other features of pediatric radiology that differ from adult radiology. “An adult who is admitted to the hospital,” Shackelford says, “routinely gets an admitting chest x-ray. There is no such thing as a routine chest x-ray done on an asymptomatic child.”

“Nuclear medicine and some of the special angiograms, such as cardiac catheterization, are performed in other sections of Mallinckrodt and not in this area. This procedure would be done by our cardiac radiologist. There is only so much one can do, and that would be a needless duplication of equipment.”

It is quite common for the pediatric radiology department to see children suffering from trauma, either resulting from a fall or a car accident. “We see a fair amount of fractures and lots of head injuries,” Shackelford says. “A brain scan is done if a child is admitted with headaches or seizures.”

Another area of pediatric radiology in which a large number of examinations are done is in the area of genitourinary radiology. “We have an active urology group here,” Shackelford says. “Urological difficulties—such as in the kidneys, bladder or ureters—is a common problem among children. We see a number of patients with bedwetting problems, recurrent infections, and an occasional tumor in the kidney.”

Even though there are many illnesses which are common to both adults and children, Shackelford emphasizes that the most important thing to remember in pediatric radiology is that children are different.

“In my specialty,” he says, “we are dealing with an age group which has an entirely different emotional make-up and outlook. And in some instances, we are dealing with disease entities which do not exist in adults. Anyone who deals with children must remember that children are not just little adults.”
Anyone who deals with children must remember that children are not just little adults.

Gary M. Shackelford, M.D.

CAT scanner

In 1975 the Mallinckrodt Institute of Radiology was one of three institutes to receive the first body scanners produced by British developers, EMI Limited. Computerized axial tomography (CAT) is considered to be the biggest advance in the field since the discovery of the X-ray in 1895. Radiologists believe it will revolutionize medical diagnosis.

“It was a real feather in Mallinckrodt's cap to be selected to be the first in the world to utilize this new piece of equipment,” Evens says. “It was obvious to everybody that the CAT scanner was going to be something important.”

EMI Limited looked at several places before they decided to choose Mallinckrodt as a recipient of the scanner, and Evens feels Mallinckrodt was chosen for several reasons.

“First of all,” he says, “we are a large institution within a well-known medical school.”

“Secondly, Mallinckrodt has established an international reputation; if we say something is good or bad, people will believe it. We have demonstrated our ability to publish and do good research at the clinical level. It was important for EMI to have a group which could write about the results of the scanner.”

Evens also feels Mallinckrodt was chosen because of the excellent reputation of Michel M. Ter-Pogossian, Ph.D., professor of radiology, and the Division of Radiation Sciences. “We have a group of scientists here with talents and expertise EMI didn't have,” Evens says. “By using our group, they realized they would get good information about how to improve the scanner.”

“Finally, Mallinckrodt is a place that has its own group of engineers and technologists who know how to handle expensive equipment. EMI knew they could put the scanner here and not have it constantly breaking down.”

With the arrival of the CAT scanner, Robert Stanley, M.D., associate professor of radiology and section head of abdominal radiology, began to devote the majority of his time to the evaluation of it.

“Essentially, I took one year's sabbatical from the abdominal service to become familiar with the scanner,” he says. “In order to adequately evaluate it, I felt I had to spend lots of time with it.

“We had a steady stream of visitors, primarily radiologists who were sent here by the EMI people. And we've had just as many people call on their own and ask to come and spend time learning about it.”

Stanley says he also was besieged by phone calls, sometimes from a hospital board member who wanted immediate information on which scanner to buy.
"We finally had to stop taking these calls," he says, "and simply ask people to write us their questions in a letter. We weren't all that familiar with the different models, and yet people wanted us to tell them which one to choose. Someone has to provide these people with answers. I'm not sure we have all of the answers, but we do tell interested people all that we know."

In addition to the many professional people who inquire about the scanner, Stanley says many patients are now referred to Mallinckrodt because of the scanner.

"We have discovered that many people have misconceptions regarding the CAT scanner," he says. "Many people come here thinking they are going to be scanned from head to foot. They think you go through this "bologna slicing machine," and when the procedure is over, a diagnosis appears on the screen.

"We had one woman come here from out-of-state with a list of fourteen questions she had prepared herself, ranging from the function of her pituitary to her ovaries. All of this would have required a six-month clinical laboratory work-up in order to make a final diagnosis. This woman, and many others like her, obviously expect more from the scanner than is possible."

Misconceptions about the CAT scanner exist among the medical population as well as lay people. According to Stanley, there is a misconception that the scanner eliminates the need for barium enemas and barium studies of the upper intestinal tract.

"This just isn't true," Stanley says. "For the most part upper GI studies are looking at small lesions that are growing in the wall of the bowel and the CAT scanner doesn't resolve those kinds of problems. However, it does eliminate the need for barium studies when the studies are done merely to show how the bowel has been moved around or pushed aside.

"On the other hand, we've scanned quite a few people who have had normal upper GI examinations, which means there appears to be nothing around the stomach or duodenum that would be suggestive of disease. We will then do a CAT scan and discover a large tumor in the pancreas or someplace else that was simply not even suggested before."

According to Stanley, this type of discovery happens time and time again. Before the use of the scanner, if the patient's symptoms were persistent enough, an arteriogram would have been done.

"This procedure may or may not have explained the problem," he says. "But our feeling is that any time you can replace an invasive study which has potential complications with a non-invasive one, everyone is better off."

In addition to its advantages as a non-invasive technique, the CAT scanner also may give added information which the physician wasn't even looking for.

"The scanner has on many occasions given us information about something other than the organ we were looking at," he says. It might show us there are gall stones present which we weren't even looking for. It shows us whether there's calcification in the walls of the aorta. It will show us everything that happens to be in that particular slice; whereas so many other studies zero in on just one particular organ system without giving us any other information."

According to Stanley, the CAT scanner has enhanced the already existing radiological equipment. "An ordinary X-ray picture is sometimes an insensitive detector to all of the subtle differences which might be going on," he says. "The scanner allows us to see a cross-section picture."

"In many cases the scanner has eliminated the need for surgery. In other instances it has explained a patient's symptoms when no other test was able to give us any idea of what was going on. It has been a tremendous non-invasive diagnostic aid."

Stanley feels he has had as much of
Washington University School of Medicine was one of the first Institutions to receive a CAT scanner. MIR now utilizes three of the whole body scanners.

Washington University School of Medicine was one of the first Institutions to receive a CAT scanner. MIR now utilizes three of the whole body scanners.

an opportunity as anyone in the world to study the diagnostic possibilities of the CAT scanner. "Its arrival at Mallinckrodt has complicated many people's lives tremendously. For the most part, however, the visitors have been very nice. And the students and residents have benefited from the experts who have been here from around the world.

"We wouldn't be here if we didn't like to teach, and I think we're teaching and learning something new every day."

Nuclear medicine

The Division of Nuclear Medicine, headed by Barry A. Siegel, M.D., associate professor of radiology, occupies space on the sixth floor of Mallinckrodt and adjoining Barnard Hospital. It is probably the most rapidly growing MIR division.

According to Siegel, nuclear medicine has been particularly active in the correlation of nuclear medicine studies with computed tomography, both in research and clinical application.

"We're trying to get a feel of where nuclear medicine studies are going to fit in and what the CAT scanner is and is not good for in terms of displacing traditional tests," he says.

While Siegel was in Bethesda, Md., with the U.S. Air Force Medical Corps, the acting director of Nuclear Medicine, Ed Coleman, M.D., assistant professor of radiology, did some of the initial work performed in the United States evaluating the relative sensitivity and specificity of brain scanning and computed cranial tomography in the evaluation of patients with mass lesions.

"We discovered that, overall, brain scanning is a little bit less sensitive than computed tomography," Siegel says. "We find a few more lesions by using the CAT scanner than we do with more conventional brain scans."

According to Siegel, there are very specific areas of the brain—such as lesions on the brain stem and in the region of the sella—in which the CAT scanner is much more accurate than the traditional brain scan.

There are many other instances in which the CAT scanner has added a
great deal to nuclear medicine diagnostic procedures.

"The information derived from the CAT scanner relative to ventricular anatomy, the ability to define hydrocephaus and atrophy of the brain is much greater with the CAT scanner," Siegel says. "The ability to make an intelligent differential diagnosis about the type of mass lesion being dealt with, rather than just saying that a scan is positive or negative, is also a big plus for computed tomography."

Siegel says that, as a result of looking at this kind of data, the conclusion was reached that for patients with a focal neurological disease, the CAT scanner provided the best form of diagnosis.

"We discovered that it really wasn't necessary to perform a brain scan on these patients unless the CAT scan was negative and we still had a strong suspicion that the patient had something wrong, such as an early stroke," he says.

In patients who have dementia or suspected hydrocephalus as their primary problem, Siegel says, the CAT scanner is by far superior to a brain scan for diagnosis. "Before the scanner," he says, "we would have to have done a pneumoecephalograph and a brain scan to screen for a mass lesion."

Siegel and his colleagues in the Division of Nuclear Medicine also have done studies correlating the results of the liver scan compared to computed tomography of the liver.

"We can summarize our initial results," he says, "by saying that liver scanning is far from dead. The overall sensitivity of body and liver scanning looks like it's going to be about the same, without too much significant difference."

"Body scanning is a much more specific technique in that it is possible to define whether a lesion is a cyst, a metastasis, or an abscess in a fair percentage of cases. On the other hand, liver scanning still leaves us with a fair amount of uncertainty in most cases. However, body scanning is still a relatively slow technique, and we can't diagnose as many patients simply because of the limited number of scanners available.

"In the future I believe liver scanning will be used to define which groups of patients may need a body scan and which specific portion of their liver may need to be scanned."

In addition to the CAT scanner, the PETT scanner (Positron Emission Transverse Tomograph), a unique concept in tomography developed at MIR, also has proved itself to be an invaluable diagnostic procedure.

Though similar to the computerized technique of the CAT scanner, the PETT differs in that it works by emission and the EMI scanner by transmission. The PETT system images organ functions, whereas the CAT scanner images structural morphology.

"The PETT system is really marvelous," Siegel says. "It allows us to obtain a cross sectional autoradiograph of the distribution of radioactivity in an intact patient. The PETT images are absolutely quantitative and allow us to overcome the problem of overlapping of superimposed anatomical structures. For example, in myocardial infarct imaging we don't have to be concerned that the scan interpretation will be hindered by overlying ribs. With a tomographic image, the ribs will be out at the periphery."

Siegel says positron tomographic efforts to date have been primarily in two areas—the brain and heart. "In the brain we have looked at normal patients, patients with strokes, and a few patients with tumors. The PETT scanner has allowed us to define a bit better the anatomical distribution of these physiologic abnormalities. It's also totally non-invasive and the radiation dosage is low," he says.

PETT, as well as the many other sophisticated pieces of diagnostic equipment in the division, exemplifies the expensive, complicated technological aspects of nuclear medicine.

"Nuclear medicine is a discipline that is held together by a technological bond, not the study of a particular organ system. It is a fascinating area because the studies of many different organ systems are linked together through a common technology and because they involve a similar expertise in the handling of radioactive materials."

**Radiation oncology**

Radiation Oncology, according to the division chief, Carlos A. Perez, M.D., professor of radiology, is a balanced division with equal numbers of people and space devoted to the clinical aspects of treating people with cancer and the research work of biologists and engineers working to find new ways to treat cancer. Everyone in the division is involved with teaching technologists, medical students, and residents.

The division is divided into six sections—cancer biology, clinical radiation oncology, physics, computers, medical oncology and pediatric oncology—each with its own programs under the direction of a section chief. According to Perez, the goals and objectives of the sections and their research
projects are intertwined to accomplish the goals of an integrated multidisciplinary program.

The Radiation Oncology Research Center at Mallinckrodt is one of the largest centers in the country. "We carry a tremendous load," Perez says. "The clinical sections provide professional coverage at St. Luke's Hospital and Missouri Baptist Hospital, in addition to Mallinckrodt and the Washington University Medical Center hospitals.

"We treat approximately 1,300 new patients a year at Mallinckrodt, 150 at Missouri Baptist, and 100 at St. Luke's."

According to Perez, the division's program against cancer currently involves two major areas: the refinement of existing forms of treatment and the identification and clinical application of new multi-modal therapy.

"Efforts in these areas require greatly expanded knowledge of a number of basic biological and clinical factors involving the host, the tumor, and various modes of treatment," Perez says. "Even though we know a great deal more about the kinetics of normal and tumor cells than we did five years ago, we are still far from a full understanding of the mechanism of action of many anti-tumor agents and of their effects through the cell cycle.

"Our lack of exact knowledge of the proliferation kinetics of human cells hampers our efforts to design optimal treatment plans. We hope to address these areas and be able to build a firm foundation of scientific evidence upon which to design better therapeutic strategies for our patients."

In addition to its academic and teaching responsibilities, the Division of Radiation Oncology has recently opened a Cancer Information Center located in Barnard Free Skin and Cancer Hospital. The Center will provide the latest information on diagnosis, treatment and prevention of malignant diseases. Referrals and sources of aid also are provided to cancer patients and their families.

"We hope the Center will serve the needs of the general public and medical professionals alike," Perez says. "Pamphlets and videotapes are available to the public, and the professional section of the Center includes a small library with periodicals, videotapes and bibliographical listings."

Perez says one of the greatest strengths of the Radiation Oncology Research Center is the close interaction that exists between the staff and clinicians from various departments who participate in the program.

"As our efforts in this direction expand, we are confident that the Center will increasingly fulfill the role that a comprehensive center should play in a medical school environment such as ours," he says.

"We have abundant resources, both in our facilities and staff, and in those of the several departments actively collaborating in our projects. We hope to continue to provide a major training center for oncologists, radiation therapy technologists and medical students."

### Radiation sciences

Of all the divisions in the Department of Radiology, Radiation Sciences, headed by Michel M. Ter-Pogossian, Ph.D., professor of radiology, is the most research oriented.

"The Division of Radiation Sciences essentially constitutes an entity working in the field of any form of radiation to bio-medical problems," Ter-Pogossian says. "The cyclotron and PETT are probably the most interesting manifestations of what we are doing and they do take up the majority of our time. However, we also carry out research in computerized tomography, especially the physical aspects of tomography."

Ter-Pogossian and his colleagues in radiation sciences work quite actively with the CAT scanner. "We are frequently associated with the people..."
from EMI," he says. "They are particularly interested in our input from the standpoint of how to change and improve the scanner. The concept of computed tomography has been a real boon to what we're doing here."

The team in radiation sciences also designed, built and tested PETT 4, which will provide four tomographic cross-section slices per scan. Its predecessor could only do one tomographic cross section.

"This is a significant improvement for imaging the brain and organs such as the liver," Ter-Pogossian says. "Unlike uncontrasted computed tomography, we're looking at more than just anatomy. We're looking at the distribution of radiopharmaceuticals which generally change as a function of time."

"Prior to PETT 4 we had to do scan after scan to evaluate different portions of an organ. We had to move the patient and couldn't really evaluate what was changing sequentially."

PETT 4 is housed in the Cardiac Care Unit where it will be used to diagnose infarcted areas on patients.

"Previously scans had not been done on acute cardiac patients because we didn't want to risk taking them out of the CCU," Ter-Pogossian says. "The acute cardiac patient should not be moved around and this is why we put PETT 4 in the CCU."

Looking toward the future

The Mallinckrodt Institute of Radiology has obviously come a long way since its beginnings in 1931. It is the largest institution in the world which combines research facilities, teaching and clinical application all in one area. It houses some of the most sophisticated new X-ray equipment in the world, with leading specialists to operate it.

Mallinckrodt has been responsible for a number of firsts in radiology: gall bladder examinations, laminography, and the first whole body scanner.

"We have obviously become a large operation," Evens says. "Last year the Institute occupied 120,000 square feet of space, which is more than two football fields, and employed more than 500 people."

Evens finds it a real challenge to administer this group and keep things running smoothly and properly. In addition to maintaining a high quality operation, he has found space to be one of his largest problems in his six years as director of MIR.

"My approach to our space problem was to initially finish the available shell space that was constructed in the late 1960's," he says, "but then we ran out of shell space. "We had no viable way to expand the Institute because we are surrounded by buildings."
"But with cooperation from Barnes Hospital, we will be able to occupy two floors of the West Pavilion which is currently under construction. These two floors will give us another 74,000 square feet, in addition to what we now have. Nuclear medicine will move there, and we also will be able to develop new space for outpatient diagnostic studies." The West Pavilion will house one of the largest cardiac radiology units in the midwest.

Mallinckrodt also has eased its space problems by developing a teaching and research facility at 4511 Forest Park. In addition, they are planning to build with Children's Hospital so that the pediatric radiology division will eventually move into the new Children's Hospital facility.

"Our space crowding is such that even with these various additions, we still don't have adequate room for my staff. Space has been a tremendous challenge."

Evens sees as another challenge for the future the problem of continuing high quality clinical and research work under tremendous financial difficulties.

"Inflation has severely affected our costs," he says. "The costs of having really superior academic radiologists and technologists has gone up considerably. Equipment, film, chemicals and supplies increase in price annually. The cost of research is up; monkeys and mice and laboratory materials are very expensive. Research funds are more limited than before. I think it's going to be increasingly more difficult to give patients and staff what they want and need with inflation pressures.

Evens says Mallinckrodt tries to control costs and do things as inexpensively as they can. "And yet a lot of people seem to think we spend too much money," he says. For example, a chest X-ray now costs $30; we can't do the same quality X-ray for $20. I live with this problem every day, and that makes administering the Institute a real challenge."

The problems of space and keeping in a good financial position are the major problems Evens foresees in the future, but he does feel the problem of recruiting high quality staff has diminished.

"I think Mallinckrodt will continue to improve because, for the first time, I feel we have reached the correct number of faculty. We have a young, enthusiastic faculty with exciting ideas. I am very, very proud of their progress."

The future goals for Mallinckrodt are to offer the best radiology training possible and continue to attract the best students, house staff, faculty and clinicians because of its exceptional facilities. The Mallinckrodt Institute of Radiology is unique; it has no parallel anywhere in the world.

"The Division of Radiation Sciences essentially constitutes an entity working in the field of any form of radiation to biomedical problems."

Michel M. Ter-Pogossian, Ph.D.
Fred C. Reynolds, M.D., professor and former head of the Division of Orthopedic Surgery, and former physician for the Cardinal football team, has been honored by the establishment of a fund to support a Fred C. Reynolds Chair in Orthopedic Surgery.

Bill Bidwill, owner of the Cardinals, started and is directing the campaign to raise $1 million for the Chair. A committee of business, medical and other interested persons has been formed to assist in the fund raising.

After the money is raised to support the Chair the committee will repeat its effort to raise another $1 million to support research in orthopedic surgery.

He is part of the Big Red experience. A combination of skill and professionalism. A friend and example. A man on the sidelines respected by those on the field.

Wise and honest. Concerned and uncompromising. Fan and critic. For almost a decade and a half, Dr. Fred C. Reynolds has been an essential member of the Cardinal family. Orthopedist and confidant, he has always been greater than the sum of those parts.

To honor him the NFL made the initial donation of $35,000 and Bill Bidwill matched that figure to launch the campaign to raise $1 million for what will become the Fred C. Reynolds Chair of Orthopedic Surgery and Research, which is akin to retring the Doc's number. Assuring him a place where he belongs, in a perpetually active and productive hall of fame.

Fred Reynolds is a special person. The problem in gathering tribute to him, testimony about him, is one of space. The comment simply cannot be contained, certainly not within the confines of this column.

However, using the campaign kickoff as an occasion to write briefly and inadequately about him, here is what just a few of the friends of Dr. Reynolds had to say.

Jackie Smith: "I could talk all night about Fred Reynolds. I guess he's one of the finest people I've met in sports. There's no one I respect more. He's a great surgeon who hates to operate. He really does. It always hurt him to have to operate on one of us. He cares so much about us."

"I remember Larry Wilson's last game, when he hurt his rib making a tackle and had to come out. He begged..."
Fred to let him go back, but Fred refused. Larry sat down, then began to plead again. Finally, Fred said, 'Alright, damn it, go on.'

"He walked up to me and he was almost crying. 'He's crazy,' he said. Fred is tough and gruff on the surface, but he let his emotion overrule his best judgement that one time."

Larry Stallings: "When I was in the service, in Washington, one of our boys broke three or four bones. We got him fixed up. It was done right, but, honestly, I didn't feel confident until I had Fred look at him. When he said everything was fine, I knew it.

"Another time, my younger brother was having trouble with bone spurs on his heels. He was scheduled for surgery. He was going to be operated on twice, within a space of eight weeks. But before the surgery, I brought him to St. Louis to see Fred.

"Dr. Reynolds examined him and told him to stop wearing loafers. He said he'd be fine. He didn't have the operations and he's had no trouble since. That was seven years ago."

Big Red trainer John Omohundro: "When I first met him, I was kind of afraid of him. He seemed like a gruff old tyrant. But the image I have of him now is that he's one of the last few country doctors, with brilliant credentials. No matter what time I call, he asks: 'What can I do for you?'

"Fred feels he can never do enough. He's a doctor's doctor, the kind a doctor would go to for help. Other things change, but Fred doesn't. He stays the same. Brilliant and giving more than he ever thinks of taking."

Dan Dierdorf: "He's like a father figure around here to all of us. One of the first things I noticed when I joined the Cardinals was the universal respect for him. To a football player, an orthopedist is like a brother. All of us have problems.

"Gruff? I like a serious doctor. There's nothing funny when he's checking out my knee."

Larry Wilson: "The reason we appreciate Fred so much is his real concern for us all. He comes across as a tough, gruff old codger, but he has love for us; his desire for us to do well is overwhelming."

Bill Bidwill: "You have to respect his integrity, both as a medical man and as a person. He doesn't travel with us anymore, but he still dreams of one more trip. The Super Bowl. If we ever get to a point where we can give rings, you know he'll get one."

Dr. Gordon Newton, former Big Red internist and a colleague of Reynolds: "I'm probably just echoing what everyone else says about Fred, but he has a near fanatic respect for integrity and honesty. He has an irate attitude of superior performance; a need to win, to be on top.

"But he's also the first man to say, 'I don't know.' Any athlete, any patient, can come to him and he'll hear the truth as Fred sees it."

Fred Reynolds' philosophy: "I was lucky I came from a small town, where honesty was the most important thing. We didn't have much. Nobody had anything. Only his own character. The people were brutally honest. It was all we had.

"I guess that honesty has carried over to candor with patients. You know, I don't have much tolerance for stupidity. And none for dishonesty."

The Reynolds Chair is going to be a worthwhile project. But difficult to fill.
Rare book collections utilized as tools for understanding

by Estelle Brodman, Ph.D.
Librarian and Professor of Medical History

The Washington University School of Medicine Library has received two extensive rare book collections within the past two years. The first one, the Bernard Becker, M.D., Collection in Ophthalmology and Diseases of the Eye, consisted of about 300 volumes from the "cradle-days" of printing (1450-1501) to the present, and a small collection of ophthalmological pictures, including a series on St. Lucy, patron saint for eye disorders. It also included mint-condition copies of some of the most influential works in the field.

Included in the collection given to the Library by Bernard Becker, M.D., head of the School's Department of Ophthalmology, were the first German, French, British and American works in the field, the original work on the transposition of vision on the retina, several Arabic texts, the first book on education of the blind, the first Western work on plastic surgery, and an early work on artificial eyes.

The second collection, the C.I.D./Max A. Goldstein, M.D., Collection in Speech and Hearing, was formally presented to...
Judith Overmier, curator of the Wangensteen Historical Library at the University of Minnesota, Estelle Broadman, Ph.D., librarian and professor of medical history, and Mark Weimer of the library staff at the Max Goldstein dedication ceremony.

the Medical Library on October 4, by Donald Calvert, Ph.D., director of the Central Institute for the Deaf (C.I.D.). Goldstein's daughter, grandson and great-granddaughter attended the presentation.

About 700 volumes are included in the Goldstein collection including: an incunabulum on language by Guarinus Veronensis printed in Venice in 1496, about a dozen 16th century works, six of the first eight works on education of the deaf, many early anatomical volumes and a fine collection on sign language.

Max A. Goldstein, M.D. (1870-1941) was one of the first Americans to travel to Europe to study medical specialties under the masters of the Viennese and German schools. He was a student of Adam Politzer, the first “dozent” in otology at the University of Vienna in 1861, who in 1873 founded the first aural clinic. More than 7,000 foreign doctors attended his clinic for instruction. It is said that Politzer could teach with equal fluency in German, English, French, and Italian. Goldstein returned to St. Louis to become professor of otology at the Beaumont Medical College, later absorbed into the St. Louis Medical College, which in turn became part of the Washington University School of Medicine.

In 1914 Goldstein, with two teachers and four students, founded the Central Institute for the Deaf, which developed into an internationally known center for the training of the deaf. It now has hundreds of pupils from all over the world, a training college for teachers of the deaf and research laboratories, clinics and hearing centers which are closely allied to the W.U. Medical Center.

Among the works in the Goldstein collection are such special treatises as John Bulwer's Chironomia, or the Art of Manual Rhetorique (1644), the writings of l'Abbe de l'Eppée, founder of the first school for the deaf, Daniel Defoe's Life and Adventures of Mr. Duncan Campbell, a deaf and dumb Gentleman (1720), John Wallis' Grammatica linguae anglicanae (1652), the Swiss physician Amman's De foque (1700), Diderot's Lettre sur les sourds et muets (1751) and Alexander Graham Bell's work.

In the field of anatomy, the collection contains works by Vesalius, Vieussens, Valsalva, Willis, Sir Charles Bell, Eustachius, Fallopius, du Laurens, and Morgagni. In surgery there is a Tagliacozzo volume and in the practice of medicine works by Galen, Celsus, Mead, Paracelsus, Boerhaave, and Malpighi are present. Cuvier's comparative anatomy appears in several editions. There is even a Pasteur item—his work on fermentation in beer (1876).

When it became obvious that the rare book collection of the Medical School Library was going to be increased substantially, both in numbers and value of books, it became necessary to add security measures to the Library Archives and Rare Book Annex.

Sensors for heat, smoke, fire, and intruders had to be built into the structure. Contracts with security alarm systems are now routine parts of the Library's budget. Special lights which do not emit ultraviolet light on old bindings and inks had to be installed. Locked cases with glass doors had to be built to rigid specifications. Bindings had to be attended to, particularly in the case of the C.I.D./Goldstein collection, which had not been cared for regularly in a number of years.

Special bookplates had to be designed and printed on rag paper. Each collection had to be evaluated by an outside specialist in the field, for the protection of both the donor and the Library and then special insurance coverage for these volumes had to be purchased. Within the past two years such insurance has quadrupled in cost in Missouri, and the increases may soon prove a real stumbling block in future budgets.

But a library is not merely a collection of books to be stored safely as artifacts of a past civilization. Instead, they are tools for an understanding of the present and for strides into the future, and any library which accepts such collections has the responsibility of (1) making them known through catalogs and findings devices, and (2) rounding out the collections by purchases of items missing from the gift to further illuminate the subject they represent.

In accordance with this belief, the Medical Library has completely cataloged the Becker collection; and with the aid of Becker, Mark Weimer, the Library's Rare Book Librarian, is preparing an annotated and illustrated catalog of the collection. Cataloging of the C.I.D./Goldstein collection is also being planned.

Anyone interested in utilizing the Becker and C.I.D./Goldstein collections should contact the Library Archives office.
Hand In Hand is a program for children with developmental handicaps and for their parents, originated by the departments of occupational and physical therapy at the School of Medicine. Harry Baum, instructor of physical therapy and coordinator of the program, recently presented the program to the American Occupational Therapy Association. Mary Pat Hakan, Debbie Stout, Camilla Dude and Beth Staenberg are the therapists who coordinate and participate in the program.

Having a handicapped child is a heartbreak most parents aren't prepared or equipped to deal with. It's hard to adjust to the fact that your child isn't "normal," a parent explains. You may adjust to the fact, but you'll never like it and maybe never understand. Then there's the whole ordeal of day-to-day living with the special considerations a handicapped child requires.

To help parents cope with these day-to-day problems, the WUMS occupational and physical therapy service at St. Louis Children's Hospital established Hand In Hand.

Hand In Hand is a program of group therapy for children with developmental difficulties and physical disabilities complemented with separate educational sessions for the parents.

"We surveyed the parents whose children were in individual therapy to see what kind of interest there was in such a program," explains Mary Pat Hakan, an occupational therapist who participates in the program and helped initiate it. "The parents were overwhelmingly interested in such a program and especially concerned about the psychological and medical aspects of their children's disabilities.

"It's amazing that in many cases, parents have never had the meaning of various medical tests explained to them." The unique aspect of Hand In Hand is the combined therapy, and parent education, with babysitting provided by occupational and physical therapy students.

The first seven-week program recently has been completed; the parents and therapists involved are all interested in continuing. The coordinators hope to offer three sessions a year.

Hand In Hand is unique not only for offering parent education, but because the children receive therapy in a group. The children are all under three years old and have had some type of brain damage, either prenatally or during delivery. The result has been abnormal muscle tone, either spastic or hypotonic, abnormal movement patterns and delay in motor and language development. Some have a normal intelligence while others have varying levels; some will progress to near normal physical abilities, while others will remain in early developmental stages.

"The group situation has really been successful," says Debbie Stout, physical therapist. "Parents see their kids in a new light. They see their kids can do more than they thought, because of the stimulation they are receiving from the other children.

"Our treatment follows a developmental sequence," Stout says. "For instance, the child must learn head control before he/she can learn to sit. Our therapy is based on facilitating the appropriate movement through handling and positioning of the child. We also suggest play activities the parents can do with the child at home. We teach them how to position the child to prevent joint contractures and deformities and positioning to enhance functional use of hands and encourage gross motor activities."

The therapists, along with the parents, establish a group of motor objectives and written goals for each child before group therapy begins. Progress is continually evaluated.

"We wanted this program to do more than just supply needed therapy," explains Harry Baum, Hand In Hand coordinator. "We wanted it to supply information and education for the parents and, more importantly, provide a forum for them to communicate their problems and feeling with others who would understand."

The parent education programs covered the medical aspects, community resources available for their children, behavioral management, growth and
development and psychological aspects.

"The psychological aspects were discussed for three weeks with a psychiatrist leading the sessions," Mary Pat Hakan explains. "This was by far the most popular subject. The parents couldn't get enough information. A lot of the parents had their first opportunity to express the anger they felt over the situation, anger at themselves, at their child and the hospital. This can be very healthy and we found the parents to be supportive, understanding, and empathetic with each other."

Parents also want to know how to handle relatives and friends who give inappropriate attention which often is prompted by sympathy and creates spoiled and undisciplined children.

"Handicapped children can become very manipulative," Hakan says. "They learn which behaviors get them what they want. We help the parent to recognize manipulative behavior and teach them how to modify that behavior.

"We have to convince the parent and others that the child is a child first and is a handicapped child second, needing discipline as much or sometimes more than a normal child," Debbie Stout says.

"The handicapped child has a place in the family, but must be made to realize that he/she is not the central figure. When this is realized by everyone involved, a much happier and cohesive family unit will evolve," Stout says.

"It's difficult having a child with a developmental problem," one parent says. "There's so many things to adjust to and accept and for many the Hand In Hand program has been a help."

Margaret Duvall, who attended the sessions with her husband, Gary, says everyone participating was very well satisfied. "Several of us are talking about trying to keep the group together, probably on a social level."

Occupational and physical therapists in the Hand In Hand program create play activities which help children with abnormal muscle tone and delayed motor development progress through developmental stages. Sitting, standing, grasping, balancing, etc., are challenges for these children. The activities pictured are designed to help them develop specific skills.
"I know the parents find support in each other," she says. "Everyone has friends, but sometimes you feel they're being sympathetic because you have this tremendous burden. But with a group of parents who all have the same problem, you can talk about things more openly.

"Probably the most difficult thing is seeing other people's normal children and thinking why isn't my child like that. We share that feeling in the group."

Some long-term projects have been inspired by the Hand In Hand Program. One mother is developing a booklet that lists nursery school programs that accept handicapped children. A babysitting pool also is being formed.

"Babysitting is really a problem for many parents," Margaret Duvall explains. We have a couple of friends who are willing and who we feel comfortable leaving our child with. In the group, one couple's child was a year and a half old before they could find someone to watch him so they could go out by themselves. We found out that this couple doesn't live too far from us, so we may be able to work something out.

"My husband and I both enjoyed the Hand In Hand program. A great many things we thought we knew, but we didn't.

"The speakers were great and everyone agreed we could go on another seven weeks. A comforting thing we learned was that we're not alone and that we can learn how others cope by getting together."

Hand In Hand also tried to help parents cope with society and the prejudices against the handicapped. "People don't realize that a handicapped child gives love and joy just as a normal child does," says therapist Debbie Stout. "The parents have begun to realize they don't have to apologize or accept the stigmas society has placed on the handicapped.

"Our society is becoming more tolerant," she says, "but people still feel uncomfortable around the handicapped and need to be educated. How to deal with people who stare politely at their children is a real problem for the parents.

"One parent related an incident which happened while he and his family were attending a ball game. A man was very noticeably staring at his handicapped son, making the father angry and everyone uncomfortable. Finally the father said to his son, 'Hey John, look at that funny old man staring;' everyone laughed and the man quit staring.

"Parents realize that they are the advocates for their children," Mary Pat Hakan says. "While a normal child can stand up for what they need or want, a handicapped may not be able to. The parents are beginning to understand that they, as a group or individually, can make an affect on society because their children have rights too."
Ternberg Receives Horatio Alger Award

Jessie L. Ternberg, M.D., Ph.D., professor of pediatrics and pediatric surgery, received the Horatio Alger Award Sept. 16.

For the past 30 years the American Schools and Colleges Association has given annual awards in Alger's name to 'give American youth the right kind of modern-day heroes to emulate.'

Ternberg was one of 13 people, including Danny Thomas and Johnny Cash, who received this year's awards. The award honors those who have become successful through self-reliance and hard work.

Ternberg is director of surgery, pediatric division, at St. Louis Children's Hospital and the first woman surgeon on the Washington University School of Medicine staff.

She earned a Ph.D. in biochemistry from the University of Texas before attending Washington University School of Medicine on a regional scholarship.

Award Established In Honor of O'Leary

Two awards have been established at Washington University School of Medicine in memory of James L. O'Leary, M.D., an eminent neuroscientist. They are the James L. O'Leary Neuroscience Prize and the James L. O'Leary Prize for Research in Neuroscience. Funds for the permanent endowment of these prizes were provided by generous gifts from family, friends, colleagues and former students of O'Leary. The first prizes will be awarded during the 1977 academic year.

O'Leary's dedication to a sound basis in neuroscience for medical students will be recognized in the Neuroscience Prize, which will be awarded for the best student performance in the neuroscience course. The Prize for Research in Neuroscience will recognize a young investigator's accomplishments in neuroscience.

O'Leary's career at Washington University School of Medicine extended from 1928 until his death in 1975. For many years he was responsible for the undergraduate course in neuroanatomy. In 1946 O'Leary became professor of neurology and the first chairman of the Department of Neurology. He served in this capacity until 1971, continuing a productive research program in both basic science and clinical areas.

Throughout his career, O'Leary devoted himself to training young investigators in the highly disciplined research fields in which he was an expert. These two awards in neuroscience will serve as a permanent recognition of the standard of excellence he set at Washington University School of Medicine.

Nobel Laureate Gives Trotter Lecture

Nobel Laureate Rosalyn S. Yalow, Ph.D., who won this year's prize for medicine, gave the third annual Mildred Trotter Lecture at Washington University School of Medicine November 1. She spoke on "Perspectives of Radioimmunoassay."

Dr. Yalow, Distinguished Service Professor, Mount Sinai School of Medicine, City University of New York, received the Nobel Award for her research in endocrinology—the study of glands and the hormones they produce —and for development of radioimmunoassays of peptide hormones.

Dr. Yalow received her Ph.D. in physics from the University of Illinois in 1945. She has received numerous honors including membership in the National Academy of Sciences, the Koch Award of the Endocrine Society and the Albert Lasker Basic Medical Research Award. Dr. Yalow has served as Director of the Soloman A. Berson Research Laboratory at the Bronx Veteran's Administration Hospital since 1973.

Since 1966, Dr. Yalow has served as a member of the President's Study Group on Careers for Women. In 1977 she became president-elect of the Endocrine Society, the first woman to serve in this capacity.

The Mildred Trotter Lectureship was established in 1975 by the Washington University School of Medicine Alumni Association to honor Dr. Trotter, professor emeritus and lecturer in the Department of Anatomy, who has served the school for 57 years.
Names Make News

George T. Wilkins, Jr., M.D., associate professor of clinical pediatrics was inaugurated as president of the 13,000-member Illinois State Medical Society (ISMS) during the Society's annual meeting in Chicago.

Wilkins also was re-elected an ISMS alternate delegate to the American Medical Association. He has served as chairman of the Society's Planning and Priorities Committee and is past chairman and consultant to the ISMS National Legislation Committee, Governmental Affairs Council and Public Affairs Committee.

Paul Lacy, M.D., Edward Mallinckrodt Professor and Head of the Department of Pathology, has received an Honorary Doctor Degree from Uppsala University, Uppsala, Sweden.

Uppsala University, Scandinavia's oldest and foremost university, has an international reputation in the sciences. Lacy received the honorary degree in honor of his achievements in the field of pathology and many contributions to the medical profession.

Lacy joined the faculty of the School of Medicine in 1956 as an instructor of pathology. He was named to his current position in 1961.

Lacy has received many honors including the Outstanding Achievement Award from the Mayo Foundation and the Banting Memorial Lectureship from the British Diabetes Association.

Bernard Becker, M.D., professor and head of the Department of Ophthalmology at Washington University School of Medicine, received the Leslie Dana Gold Medal for outstanding work in the prevention of blindness.

The award was presented to him by the St. Louis Society for the Blind and is their highest honor.

A specialist in glaucoma and diabetic retinopathy, Becker has received many honors and has published more than 300 papers in scientific journals.

Genetics Department Head Appointed

Donald C. Shreffler, Ph.D., has been named James S. McDonnell Professor and Head of the McDonnell Department of Genetics at the School of Medicine. Dr. Shreffler has served as acting head since the formation of the department.

Washington University Chancellor William H. Danforth said, "I am delighted Dr. Shreffler has decided that he can both head the department on a permanent basis and pursue his promising research. We look forward to his building one of the outstanding departments of the world."

The Department of Genetics was established in 1975 with a gift of $4 million from James S. McDonnell and family and is located in the McDonnell Medical Science Building. It is primarily a basic science department engaged in research and teaching.

Dr. Shreffler is a specialist in the genetics of the immunologic system and in the genetic basis for organ and tissue transplant rejections.

A native of Kankakee, Illinois, Dr. Shreffler holds undergraduate and master's degrees from the University of Illinois, Urbana, and his Ph.D. in genetics from the California Institute of Technology, Pasadena. Associated with the University of Michigan Medical School from 1961 to 1975, he also was a National Science Foundation Research Fellow at the Basel Institute for Immunology, Switzerland. He is a member of the American Association of Immunologists, the Transplantation Society, and the Genetics Society of America, and served on the National Institutes of Health Immunobiology Study Section from 1970 to 1974.

NEWLY ELECTED FELLOWS TO THE AMERICAN COLLEGE OF PHYSICIANS

Edgar C. Boedeker, M.D. '68
Jerome D. Cohen, M.D. '64
Donald H. Figer, M.D. '50
Hunter H. Heath, III, M.D. '68
Owen S. Kantor, M.D.
Charles Kilo, M.D. '59
Robert H. Leahy, M.D.
Richard W. McCallum, M.D.
John A. Nickell, Jr., M.D.
Robert D. Porter, M.D. '67
Cary A. Presant, M.D.
Steven B. Raffin, M.D. '68
Udipi R. Shettigar, M.D.
Barry A. Siegel, M.D. '69
David K. Sirota, M.D. '60
Marc J. Straus, M.D.
Francis J. Tedesco, M.D.
Frank Vinicor, M.D. '67

Donald C. Shreffler, Ph.D., is the newly appointed James S. McDonnell Professor and Head of the Department of Genetics.
President's Letter

As president of the Medical Center Alumni Association, I represent you in many ways. The first duty and privilege was to write Dr. John Collins, Department of Surgery, and Dr. Philip Needleman, Department of Pharmacology, to inform them they had been designated by the Senior Class as the Alumni Teaching Scholars for 1977. This award carries a financial grant of $10,000 to each recipient’s department and serves as a reminder to all that teaching is a vital function of a medical school, a prime reason for being.

Incidentally, with the cost of tuition escalating at the same rate as coffee, the Student Loan Fund, administered through the Alumni Office, provides an urgently needed service for students. John Herweg, who oversees our loan fund, tells me that over 41 percent of our students are receiving some form of financial aid and that in the past year 40 individuals benefited from loans from this fund. Warning to all readers: You’ll hear more about loan funds and scholarship funds in the next OUTLOOK.

We will be hosting a reception at the Orthopedic meeting in Dallas and the other major medical meetings around the country, and look forward to having you attend. Enough for now—except to remind you of the Clinical Conference in St. Thomas in January.

Mary Langston Parker, M.D. ’53, President, Medical Center Alumni Association

Next came the Freshman Welcoming Party. The students were taken on a guided bus tour of St. Louis, followed by happy hour and dinner at the St. Charles Vintage House and Wine Garden (nee Wepprich’s Wine Garden) where beer flowed like wine and vice versa. We alums and faculty who attended were favorably impressed by the caliber of the students. The students present seemed to enjoy the opportunity to get together for a relaxing afternoon and evening. For them, it was a pleasant interlude between paying their tuition bill and starting their first semester’s work.

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Mary Langston Parker, M.D. ’53, President, Medical Center Alumni Association

Class Notes

Pre ’20s and ’20s

Paul J. Ewerhardt, ’12, Arlington, VA, has retired after more than 30 years of private psychiatric practice.

Theodore H. Hanser, ’22, St. Louis, received the LL.D. Honorary Degree in May from Concordia Theological Seminary.

George H. Garrison, ’24, Oklahoma City, OK, an addition to the Children’s Memorial Hospital was dedicated in his name. Dr. Garrison has been practicing pediatrics in Oklahoma City for 48 years.

John S. Wier, ’27, Fond du Lac, WI, was honored for 50 years of service as a physician at the State Medical Society of Wisconsin’s annual meeting.

A. Ford Wolf, ’29, Temple, TX, was honored by The American College of Allergists with an “Award of Merit.”

’30s

Eugene M. Bricker, ’34, Columbia, MO, received the Ferdinand Valentine Medal awarded by the New York Academy of Medicine. The Valentine Award is regarded as one of the most prestigious honors in the field of surgery.

Alva E. Miller, ’34, Tacoma, WA, has been clinical director of Western State Hospital for 18 years after spending 25 years in the U.S. Army. Dr. Miller also was the European Consultant to the Surgeon General.

Jean F. Rosier, ’34, Mason City, IL, has retired after 35 years of Foreign Service with the Federal Government.

Martin Compton, ’37, Bloomington, IL, is the new medical adviser to the McLean County Health Department. He was the medical director for the Country Life Insurance Company.

Charles Eckert, ’39, Albany, NY, former chairman of the Department of Surgery of the Albany Medical College became the second person in the history of AMC to receive the appointment of Distinguished Professor.

Brig. General Robert M. Hardaway, ’39, El Paso, TX, retired from the Army as Commanding General of the William Beaumont
Army Medical Center. He accepted a position as professor of surgery at Texas Tech University School of Medicine in El Paso.

'40s

Joseph D. Judy, '41, was elected vice president of the Board of Education of the Special School District of St. Louis County.

Frank A. Brown, '42, Atlanta, GA, spent 29 years in Missionary Medicine in China and Japan. The Yodogawa Christian Hospital, Osaka, Japan increased from seven staff workers in the clinic in 1955 to a 175-bed, 300 staff workers and 33 full-time physicians in 1976.

Charles Hugley, '42, Atlanta, GA, is professor of medicine at Emory University, Atlanta.

C. Barber Mueller, '42, professor of surgery at McMaster University, Hamilton, Ontario, received an Alumni Citation from Washington University on Founder's Day October 8.


Parker Beamer, '43M, Chicago, IL, was elected to Who's Who in the World for Medical Achievements.

Bernard A. Bercu, '44, Wheeling, WV, was named chief of medicine at the Ohio Valley Medical Center.

Ceylon S. Lewis, Jr., '45, Tulsa, OK, is president of the Oklahoma State Medical Association.

James C. Fossum, '46, New York, NY, director of the Institute for the Crippled and Disabled (ICD), has been appointed clinical professor of psychiatry at New York University School of Medicine.

Eugene P. Johnson, '46, Casey, IL, has been elected secretary-treasurer of the Illinois State Medical Society. Dr. Johnson is also a member of the Illinois Academy of Family Practice.

Marvin Corblath, '47, Baltimore, MD, professor and chairman of the Department of Pediatrics, University of Maryland School of Medicine publicized neonatal hypoglycemia and demonstrated the effect of glucagon on the heart.

Major General Kenneth R. Dirks, '47, Denver, CO, assumed command of Fitzsimons Army Medical Center in Denver. He formerly commanded the U.S. Army Medical Research and Development Command in Washington, D.C.

Winfield Dow Edgerton, '47, Davenport, IA, is currently medical director of the Maternal Health Center. He had several papers published in the field of laparoscopy and a portion of a textbook entitled "Laparoscopy."

Helen Hofsommer Glaser, '47, Atherton, CA, clinical assistant professor of psychiatry at Stanford co-authored a book entitled "Changing Hospital Environments for Children."

William M. Landau, '47, St. Louis, MO, was elected the 97th president of the American Neurological Association.

Edward P. Wood, '47, Anacoda, MT, is practicing radiology at Powell County Hospital, Deer Lodge, MT. He also is an Episcopal priest and rector of the St. Martin Church, Anacoda and St. James in Deer Lodge.

Philip N. Jones, '48, Chicago, IL, was promoted to professor of medicine at Rush Medical College. He also serves as a trustee of Rush University and Rush Presbyterian St. Lukes Medical Center.

Leonard Berg, '49, St. Louis, MO, professor of clinical neurology was elected by the part-time faculty of WUMS as its representative to the Executive Faculty, the Medical School's governing body.

John A. McChesney, '49, San Jose, CA, was made associate clinical professor of medicine at the University of California Medical School in San Francisco.

'50s


Lowell A. Gess, '51, Alexandria, MN, was a medical missionary to Nigeria and Sierra Leone, Africa for 23 years. Dr. Gess still spends one or two months each year in Sierra Leone and performs eye surgery.

Bruce D. Fallis, '52, Dallas, TX, is the author of "Textbook of Pathology," and co-authored "Textbook of Human Histology."

C. Jay Hoyt, '53, La Mesa, CA, is currently president of the San Diego International Plastic Surgery Association and also is president of the La Mesa California Chapter of the International Wine and Food Society.

Donald B. Rinsley, '54, Topeka, KS, has been appointed clinical professor of psychiatry at the University of Kansas School of Medicine. A senior faculty member in adult and child psychiatry in the Menninger School of Psychiatry, he also serves as associate chief for education, psychiatry service, Topeka Veterans Administration Hospital and holds a Spencer Foundation Fellowship in Advanced Studies at the Menninger Foundation in Topeka.

Robert C. Drews, '55, St. Louis, MO, is president of the American Intraocular Implant Society.

Howard Siedler, '55, Kentfield, CA, has been medical director of the Kentfield Medical Hospital since 1973. In addition to the post at KMH, he is chairman, Marin General Hospital EEG department; trustee, Marin Medical Society; trustee Ross General; assistant clinical professor of neurology, University of California, San Francisco; and consultant at San Francisco V.A. Hospital and San Quentin Prison.

Robert M. Fillers, '56, recently moved to Toronto to be surgeon-in-chief at The Hospital for Sick Children and professor of surgery at the University of Toronto.

Ronald C. Hertel, '56, St. Louis, MO, is president of the Missouri Orthopaedic Association.


Allan E. Kolker, '57, professor of ophthalmology at the School of Medicine, has been elected to the American Ophthalmological Society, one of the oldest and most prestigious eye societies.

Theodore J. Brickner, '58, Tulsa, OK, has been named a Fellow of the American College of Radiology.

Edwin King Burford, Jr., '58, left his private practice in family medicine to become medical director of Emergency Medical Services at St. Francis Medical Center, Cape Girardeau, MO.

Alexander Gottschalk, '58, Hamden, CT, professor of diagnostic radiology and director of nuclear medicine at Yale University School of Medicine gave the ninth annual Heberding Memorial Lecture at South Side Hospital, Youngstown, OH. Dr. Gottschalk is chairman of the nuclear medicine program committee of the Radiological Society of North America.

John H. Holt, Jr., '58, is professor of medicine at the University of Alabama in Birmingham and chief of cardiology at Birmingham V.A. Hospital.

Milton J. Deitch, '59, Atlanta, GA, is in private practice in urology.
Gabriel S. Zatlin, '60, Providence, RI, recently returned from Africa and is now the student health physician at Brown University.

Jack D. Singer, '62, is the senior lecturer in Human Genetics, University of London and consultant in Human Genetics, Kings College Hospital and Medical School.

Robert L. Fulton, '64, became board certified in thoracic surgery and was promoted to associate professor of surgery at the University of Louisville. Dr. Fulton is presently chief of surgery at Louisville General Hospital.

David H. Hussey, '64, Houston, TX, has been cited for distinguished medical achievements by being named a Fellow of the American College of Radiology.

Edward F. Ragsdale, '64, Alton, IL, president of the Madison County unit of the American Cancer Society, has been active in community affairs. He is chairman of the Madison County Republican party, and board member of the Illinois State Medical Society Political Action Committee.

Thomas F. Frist, Jr., '65, was elected president of Nashville's Hospital Corporation of America, the world's largest hospital management company.

Max A. Baker, '66, was elected president of the Arkansas Psychiatric Society and chief-of-staff elect of St. Edward's Mercy Medical Center in Ft. Smith, AR.

Grace L. Blair, '66, Palo Alto, CA, was appointed chief of cardiovascular surgery at Palo Alto V.A. Hospital, but will continue as assistant professor of cardiovascular surgery at Stanford University Medical Center.

Peter W. Brodoy, '67, Carol Stream, IL, is an assistant professor of surgery at the Illinois Medical Center, and has a private practice in general surgery in Winfield, IL.

John R. Crouch, Jr., '67, San Bernardino, CA, clinical instructor of medicine at UCLA School of Medicine, has been appointed acting director of the San Bernardino County Medical Center Family Practice Department.

Michael Jacobs, '67, Woodside, CA, received the Kaiser Foundation Award for excellence in clinical teaching.

Richard C. Shaw, '67, St. Louis, MO, published a paper entitled "Ventricular Aneurysms."

Michael R. Treister, '67, Chicago, IL, is active in private practice of orthopaedic and hand surgery at Treister Orthopaedic Services, Ltd. He taught orthopaedic surgery in Santo Domingo, Dominican Republic, under the auspices of Care-Medico.

Wayne A. Border, '68, Torrance, CA, was appointed chief of the Renal Immunopathology Laboratory at UCLA Harbor General Hospital, Los Angeles.

James M. Nusaida, '68, has been in multispecialty group practice in Corvallis, OR, for the past three years.

Michael E. Reif, '68, Oklahoma City, OK, is a clinical instructor in surgery at the University of Oklahoma Health Sciences Center, and a Fellow of the American College of Surgeons. He also is a Fellow of the American College of Gastroenterology, and has a private practice at the Mercy Health Center in Oklahoma City.

George R. Randall, '69, Wichita, KS, entered private practice but will continue as a member of the attending staff at the University of Oklahoma.

Joann L. Dotta, '70, recently received the Ph.D. degree in pharmacology from Vanderbilt University. Her thesis was "Prostaglandins: Modulators of Organ Blood Flow and Function."

Bruce D. Fisher, '70, Longmeadow, MA, has entered private practice of infectious diseases and internal medicine with Springfield, MA Medical Associates, Inc. He also is on staff of the Baystate Medical Center and Mercy Hospital.

Eric B. Zarbrugg, '70, River Forest, IL, began his third year of pediatric neurology training at Michael Reese Hospital in Chicago.

Jo B. Zarbrugg, '70, River Forest, IL, is continuing in her private pediatric practice in Oak Park.

Major Dennis Cooper, '71, was awarded the Army Medal of Commendation for distinguished service as an ophthalmologist at Fort Hood, TX. He is now in private practice in Scottsdale, AZ.

Harrison B. Keller, '71, San Antonio, has completed his otolaryngology residency. Dr. Keller began a plastic surgery fellowship at Wilford Hall USAF Medical Center, Lackland AFB, TX.

Jane E. Brazy, '72, Durham, NC, has been appointed an assistant professor in pediatrics and perinatal medicine at Duke University.

Peter C. Brazy, '72, Durham, NC, is completing a nephrology fellowship at Duke University.

John M. Eisenberg, '72, Philadelphia, is an assistant professor of medicine at the University of Pennsylvania, serving as co-director of the Primary Care residency and as associate director for medical affairs of the National Health Care Management Center.

Toby Nathan, '72, began pediatric practice in August with the Regional Health Center in Wilmington, MA.

Thomas C. Namey, '73, Birmingham, AL, was recently elected to membership in the Society of Sigma Xi, and the Orthopaedic Research Society. He is currently an instructor in medicine and clinical instructor in nuclear medicine at the Alabama Medical Center.

Anette Twitchell, '73, has completed a three year family practice residency and spent a year as full-time faculty in the Department of Family Practice, Community Medicine and Dentistry. She is currently medical director at Oklahoma City Urban Indian Health Project.

Stephan P. and Natalie H. Hozak, '74, have recently joined Dr. H. W. R. Fluckiger in the Department of Family Practice at the Springfield Clinic in Illinois.

Keith A. Wichterman, '74, New Haven, CT, spent three months in Nigeria and three months at the Albert Schweitzer Hospital in Haiti during the past year.

Robert M. Black, '75, Hamden, CT, will begin a renal fellowship at Massachusetts General and later will do research at the Peter Bent Brigham Hospital in nephrology.

Bonnie L. Mitchell, '76, received a $12,000 Cancer Research Fellowship from the Ladies Auxiliary to the Veterans of Foreign Wars. She will be studying a cancer-causing chemical which is associated with atmospheric pollutants found in coal tar, cigarette smoke and exhaust fumes.

Former House Staff and Former Faculty

Willard Allen, M.D., is continuing as associate dean in charge of admissions at the University of Maryland School of Medicine, Baltimore.
Wallace P. Berkowitz, M.D., Belleville, Ill., is a member of the American Association of Cosmetic Surgeons and a fellow of the American Academy of Ophthalmology and Otologyngology.

Peter D. Clarisse, M.D., Portsmouth, RI, was elected secretary of the Newport County Medical Society and treasurer of the Rhode Island Radiological Society.

Robert J. Glaser, M.D., Athens, CA, president of The Henry J. Kaiser Family Foundation was bestowed a Masteraship from the American College of Physicians In recognition of his selfless and creative career of public service.

Carl S. Insber, M.D., Newport, RI, was board certified in pediatrics in Nashville. He will return next year to establish a private practice in St. Louis.

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Catherine A. Smith, Ph.D., Portland, OR, received the Award of Merit from the American Otolological Society for research in otology.

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**WASHINGTON UNIVERSITY MEDICAL CENTER**

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Over the years this Fund has assisted scores of Washington University medical students in meeting their expenses, especially those of an emergency nature. As educational costs continue to rise, the Fund assumes increasing importance. Grateful thanks is extended to all 1977 contributors.

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In Memoriam

Enor G. Anderson, '28... Apr. 27, 1977
Berlin F. Barham, '39... Jan. 2, 1977
Brian B. Blades, '32... Sept. 28, 1977
Elmer O. Breckenridge, '23

Thomas H. Buford, M.D., May 17, 1977
Leonard F. Bush, '34... June 17, 1977
Arcie Carr, '21... July 31, 1977

Lewis S. Chase, M.D., May 18, 1977

Carl E. Chism, M.D., June 25, 1977

Frances R. Crouch, '36... June 20, 1977

Edward W. Davis, '44... Aug. 28, 1977

Hans Deutsch, '23... Aug. 5, 1977

Oliver Ehrhardt, '26... Apr. 1, 1977

Harry Estes, M.D., date unknown

Edwin Gildea, M.D., July 19, 1977

William N. Jenkins, '20... June 2, 1977

R. W. Kelley, '39... June 26, 1977

Otto K. Megee, Jr., M.D., date unknown

Frank J. Slater, '29... May 14, 1977

Roland Slater, '25... Aug. 21, 1977

Harry K. Takenaka, '38... Jan. 2, 1977

Wesley D. Thompson, Jr., M.D., date unknown

Jerome A. Weaver, '39... Aug. 26, 1977

Joseph R. Westmoreland, '32... date unknown

Harvey L. White, '20... Oct. 1, 1977

James S. Womble, '41... Nov. 9, 1976

Mueller, '42, receives Alumni Citation

C. Barber Mueller, '42, professor of surgery at McMaster University, received a 1977 Alumni Citation at Washington University's Founders Day.

Mueller is a renowned educator and surgeon who has won acclaim for his contributions to medical education. He has achieved special recognition for his basic research on the human kidney, with particular reference to acute renal failure in surgical and wounded patients. Mueller's clinical experience includes internship and residency at Barnes Hospital and fellowships at Harvard Medical School and at Washington University School of Medicine.

He has served as instructor and assistant professor of surgery and clinical surgery at Washington...
University School of Medicine and as professor of surgery and department chairman at the State University of New York, Upstate Medical Center.

Mueller is an active member of more than 20 medical and honorary societies, including the American College of Surgeons; Royal College of Physicians and Surgeons (Canada); the American Surgical Association; Phi Beta Kappa; and Alpha Omega Alpha, the national medical honor society.

He has received special appointment to the National Research Council, the Licensing and Examination Committee of the Medical Council of Canada, the Board of Consultants of the Ontario Cancer and Research Foundation, and the Committee on Examinations of the Royal College of Physicians and Surgeons.

For the past 6 years, he has served as an active committee and board member of the National Board of Medical Examiners. Mueller is the author of more than 70 publications, which include works relating to the philosophical and ethical background of medicine in society. Co-editor of the "Canadian Journal of Surgery," he has been a featured speaker at more than 25 international and national medical conferences during the last three years.
Orthopedic Center Opens

Nautilus equipment, which is ordinarily used primarily by professional athletes, is the unique aspect of the new Orthopedic Center at Washington University School of Medicine.

The Center was established in memory of William G. Moore, Jr., by his family and friends.

The sophisticated nautilus exercise equipment was chosen because of its durability and efficiency in improving muscle strength and endurance.

Washington University is the only place in the midwest and one of just a few places in the country where nautilus equipment is being used for rehabilitative purposes.

Leo A. Whiteside, M.D., head of the Division of Orthopedic Surgery, and Jordan H. Ginsberg, M.D., instructor in orthopedic surgery, are co-directors of the Center.
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