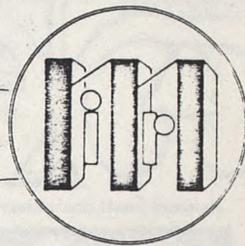


FOCAL SPOT

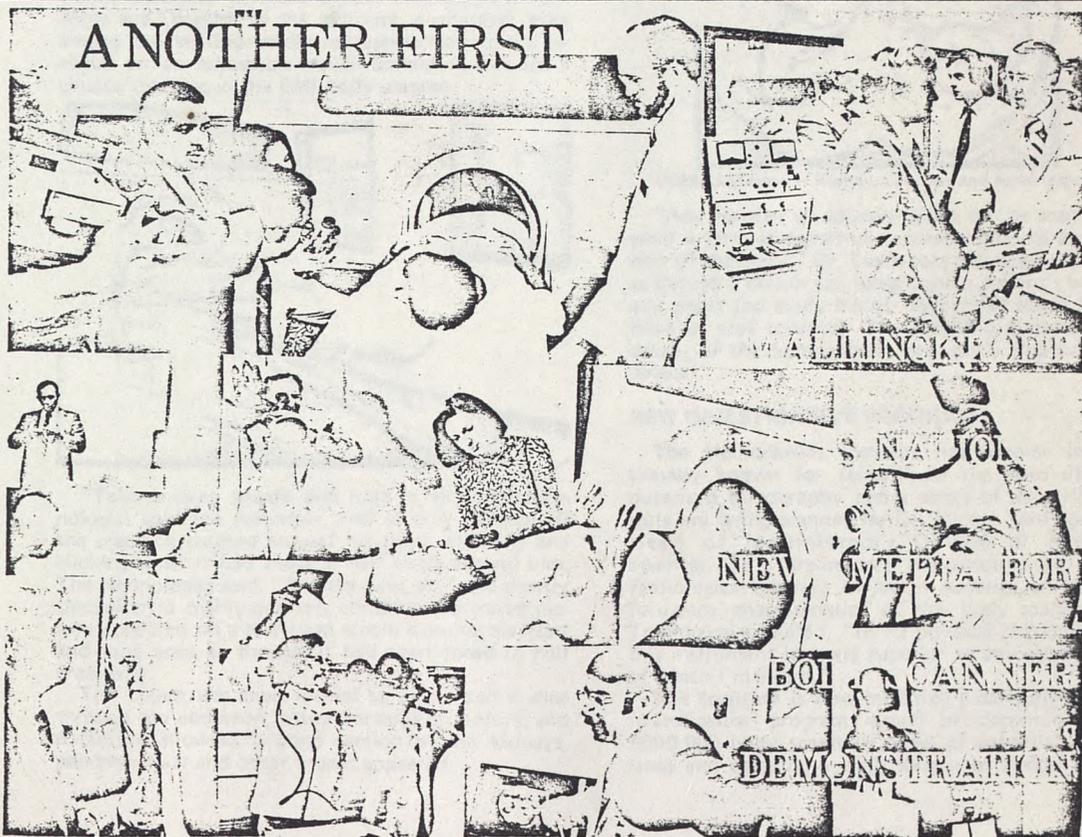


A NEWSLETTER OF MALLINCKRODT INSTITUTE OF RADIOLOGY

VOLUME V

WINTER 1975

NUMBER 14

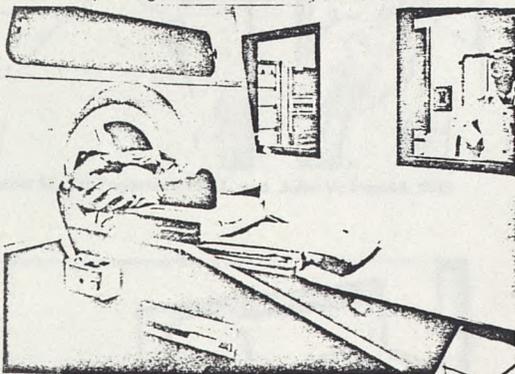


ANOTHER "FIRST" FOR MALLINCKRODT

A new computerized X-ray body scanning system destined to revolutionize the field of radiology worldwide was demonstrated for the first time at a national press conference October 22 at the Mallinckrodt Institute of Radiology, where one of the first three machines in the world produced by British developers, EMI Limited, had just begun operation.

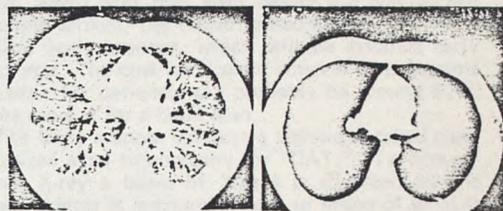
Over one hundred selected media representatives from nationwide newspapers and magazines, wire services, medical and scientific journals, and local television and radio stations received invitations to the Institute's open house which included a luncheon in Queeny Tower followed by a discussion in Scarpellino Auditorium and demonstration of the body scanner.

In the demonstration, supervised by Dr. Ronald G. Evens, Elizabeth E. Mallinckrodt Professor of Radiology and Director of the Institute, a volunteer from among the visiting media representatives simply reclined on an adjustable couch extending through a circular opening in the EMI body scanner.

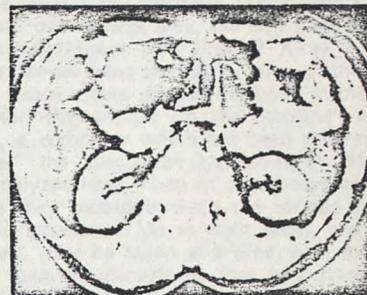


"Take a deep breath and hold it, sir," the technologist told the volunteer, and in only 20 seconds the machine rotated around his chest, whirring and clicking until it had made a half circle around him. The technologist said, "Breathe now, sir," and shortly thereafter, a highly-defined, computer-generated picture appeared on a television screen showing his heart and lung area as though it had been sliced in half cross-wise.

The couch was then moved so as to scan a slice through the abdomen, using the same procedure, and a picture showing a cross section of the kidneys, pancreas, liver and other organs appeared.



Chest-pulmonary vessels and Heart (normal).



Middle abdomen - Kidney, pancreas and aorta (normal).

"Any number of adjacent slices can be scanned to yield a three-dimensional representation of any portion of the body," Dr. Evens told the observers. "It is as though a doctor can hinge open a patient's body at any point and study bones, organs and tissue formations at that location. The resulting pictures show details of the human body previously impossible to detect."

NEW INVESTIGATIVE PROGRAM

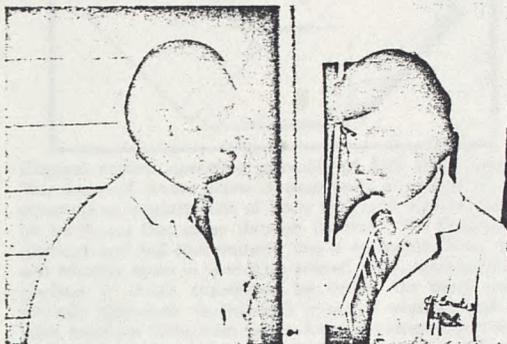
The Mallinckrodt Institute has become internationally known for research in the field of computerized tomography and a series of scientific projects are being planned by Dr. Michel Ter-Pogossian, Head of Mallinckrodt's Division of Radiation Sciences. In a preliminary evaluation given to the Radiological Society of North America on the performance characteristics of the body scanner, Dr. Ter-Pogossian stated, "In its physical characteristics, this instrument is vastly superior to any other device of which I'm aware."

The Institute is now initiating a carefully-planned investigative program aimed at determining the \$550,000 body scanner's range of potential applications and covering a wide variety of studies ranging

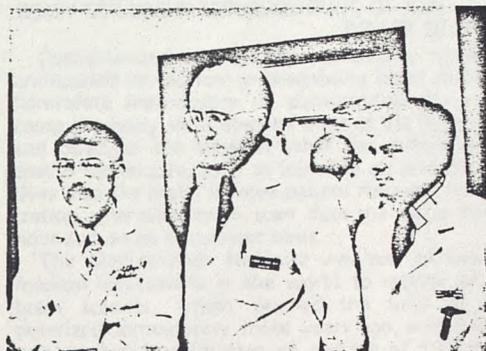
Body Scanner

over much of the body with emphasis on the chest and abdomen.

Collaborating in the program will be Michel M. Ter-Pogossian, Ph.D., professor of radiology, and John V. Forrest, M.D., Stuart S. Sagel, M.D., and Robert J. Stanley, M.D., associate professors of radiology. Technical representatives of EMI also will work closely with Armand Diaz, Technical Administrator of Mallinckrodt, and other members of the Institute staff during the clinical testing and evaluation program so any knowledge obtained about the system or its operation can be incorporated in future machines.



Michel M. Ter-Pogossian, Ph.D. and John V. Forrest, M.D.



Stuart S. Sagel, M.D., Robert J. Stanley, M.D. and Armand Diaz, R.N., R.T., F.A.S.R.T.

SECOND BODY SCANNER TO BE INSTALLED

Dr. Evens said that even before the clinical test machine arrived, the Institute had already ordered a second body scanner, which will be installed early next year. The cost for a scan, when it does become available for patients, will probably be around \$230 — the same as for a brain scan.

The body scanner employs a technique called computerized axial tomography, or "CAT." In a conventional X-ray a beam of X-rays is absorbed by the dense objects it encounters and an image of what is and what is not absorbed is recorded on a film. Unlike the usual X-ray machines, which send a broad X-ray beam over a large area, the new body scanner directs a pencil-point thin line of X-ray photons through a narrow cross section, or slice, of the body.

As the beam moves around the body in the same plane, imprinting images on the machine's crystal detectors, a computer which has been programmed "to know" the absorption capacities of different tissues, analyzes how much of the X-rays were absorbed as they passed through the various internal organs and structures. Up to eight slices, one centimeter apart, may be taken at a time, with the total radiation dose comparable to that of current diagnostic radiographic studies.



Dr. Evens views a patient's scan on the television monitor screen. Each picture can also be photographed or stored on magnetic tape for later review.

Dr. Evens explained, "The new body scanner is capable of ten times more sensitivity to differences in densities. It will allow us to detect, by X-ray, clotted blood and other abnormal tissues, enlarged organs and tumors that we could not have detected to this point."

Body Scanner

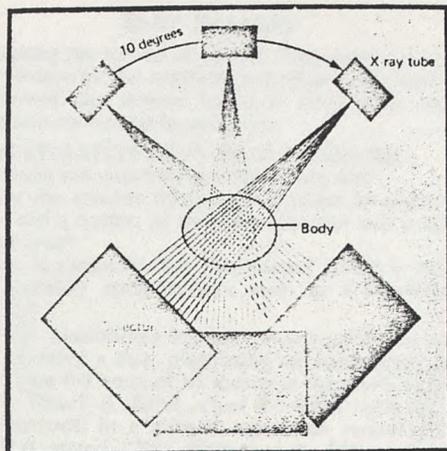


Diagram depicts operating principle of EMI body scanner. Thin beam of X-rays passes through body of patient. Crystal detectors on opposite side of body flash with light as they are hit by X-rays that come through the body. The readings are digitized and fed continuously into a computer. X-ray tube and detector move in semicircle around body, making 80,000 readings of X-ray absorption by tissues the beam passes through. Computer reconstructs image of slice through the body based on absorption values. Resulting image is portrayed on television screen, which can be "tuned" to show different absorption values.

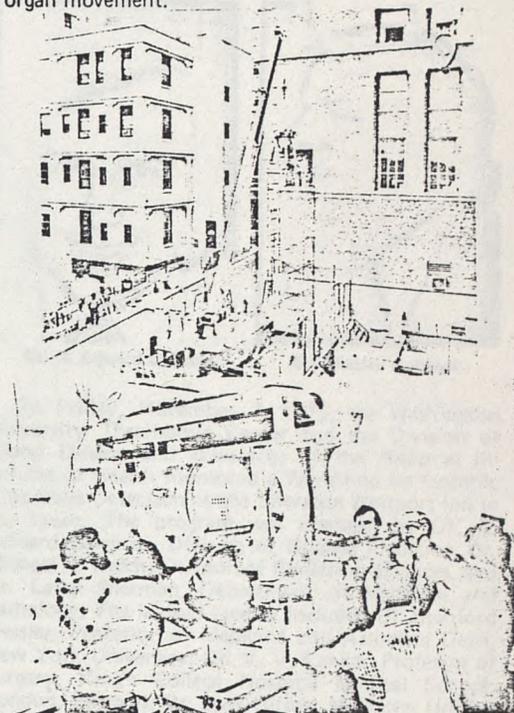
BODY SCANNER CONSEQUENCE OF EMI BRAIN SCANNER

Computerized tomography has already created an undisputed revolution in diagnosing brain disorders, heretofore inaccessible to conventional X-rays because the bony skull absorbs most of the X-ray beam and obscures the view of what lies within it. The special techniques, such as injecting air and chemical dyes into the brain, involve patient risks and hospitalization whereas a brain scan does the job in half an hour and on an outpatient basis.

The Mallinckrodt Institute was one of the first medical institutions in the world to receive an EMI brain scanner, which opened the field of computerized tomography three years ago, and now has two machines performing an average of 120 cranial scans per week, Dr. Evens said.

The difference of transferring this method of scanning to the whole body was that it requires about

four minutes — too long for a patient to hold his breath to prevent a blurred picture the movement would cause. With the 20-second EMI scan, the patient can easily hold his breath, more or less halting organ movement.



Body scanner arrives at Mallinckrodt.

The machine was delivered to the Mallinckrodt Institute on September 17 and was put into use three weeks later. Since it has been in operation, approximately 100 persons have been scanned. Ten were normal healthy volunteers and the others were patients.

"Our mood is one of cautious optimism from the standpoint of what it ultimately may mean in diagnosis," said Dr. Robert J. Stanley, chief of abdominal radiology at Mallinckrodt.

"Three rather obscure cancers of the pancreas have been shown very clearly by the body scanner. In one instance, the machine identified holes in the pancreas

Body Scanner

indicating the spread of cancer. Two renal cysts have been shown by the machine, a diagnosis that later was confirmed. Six lesions found in other body organs were also confirmed by surgeons."

INVESTIGATIVE STUDIES IN PROGRESS

Among the possibilities under study are:

Can the scanner distinguish between an abscess, a cyst, and a tumor, or between a benign and a malignant tumor?

Can it detect hidden metastases? Could it detect postoperative complications such as a hemorrhage abscess?

Other possibilities include finding gallstones without injecting a dye, diagnosing an aortic aneurysm, qualifying the amount of iodine in the thyroid gland.

Dr. Stuart S. Sagel, chief of chest radiology at Mallinckrodt, in a clinical evaluation report to the R.S.N.A. stated, "The abilities of the EMI body scanner to complete a scan during suspended respiration has resulted in the clearest and most precise computerized tomograms of the chest and abdomen yet obtained. Our preliminary results need definitive confirmation by well designed studies, but in many anatomic areas and organs it is already quite obvious that computerized tomography is capable of providing unique and often specific diagnostic information. Such data would be difficult or impossible to obtain in a non-invasive fashion by conventional radiologic or clinical techniques."

"After two years of experience with the EMI brain scanner," Dr. Evens stated, "we have confidence that the whole body scanner data collected at the Institute by our Mallinckrodt team of diagnostic radiologists and bio-medical scientists will be valuable to the entire field of medicine."



Body scanner produces crisp shots of the most remote soft organs in the body — like the pancreas, liver, and bile ducts — within twenty seconds. Scan of dilated bile ducts shows carcinoma of head of pancreas on lower level cuts.

ISOTOPIC THROMBUS DETECTION WORKSHOP



Dr. R. Edward Coleman



Dr. Michael J. Welch

On Friday, November 7, 1975, the Washington University Thrombosis Center and the Division of Blood Disease and Resources of the National Institutes of Health sponsored a Workshop on Isotopic Thrombus Detection at the Sheraton Westport Inn in St. Louis. The program was arranged by Dr. R. Edward Coleman, Division of Nuclear Medicine, Dr. Michael J. Welch, Division of Radiation Sciences, and Dr. Larry Sherman, Department of Medicine and Pathology. The invited faculty included Dr. Stanford Wessler, Professor of Medicine and Associate Dean, New York University; Dr. V. V. Kakkar, Professor of Surgery, King's College Hospital Medical School, London, England; Dr. Jack Hirsch, McMaster University Medical Centre, Hamilton, Ontario, Canada; Dr. Edwin Salzman, Professor of Surgery, Harvard Medical School, Dr. Leon Malmud, Temple University Health Sciences Center; Dr. Buck Rhodes, University of Kansas Medical Center; Dr. Lawrence Harker, Harborview Medical Center, Seattle, Washington; Dr. Michel Ter-Pogossian, Mallinckrodt Institute of Radiology; and Dr. John Harwig, Mallinckrodt Institute of Radiology.

The program topics included the scope of the problem, use of the fibrinogen uptake test, other isotopic techniques available to detect deep venous thrombosis, venography and tomographic studies, and current utility of heparin prophylaxis for deep venous thrombosis.

The workshop was attended by 50 persons, all of whom are involved in the area of isotopic thrombus detection.

RANDOM GLIMPSES OF NEW PERSONNEL

Vincenza ("Chenza") Boisseau, Clinical Research Coordinator in Radiation Oncology received a B.S. degree from the University of Rochester, where she also did special study in the Department of Anatomy Graduate School. Her work experience includes research positions at the University of Rochester, Yale University and George Washington University. Prior to joining the staff of Mallinckrodt, Chenza was a biostatistician-research associate at the Jewish Hospital of St. Louis. Her bibliography includes an extensive list of publications, abstracts, and manuscripts in preparation.

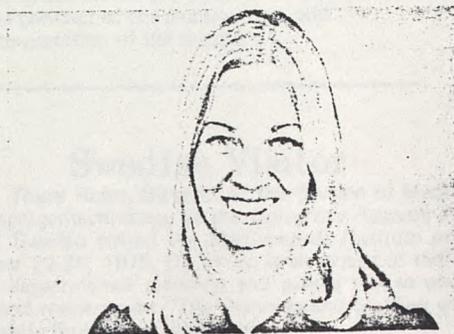


Vincenza ("Chenza") Boisseau



Jack Trachtman

Systems Analyst, Jack Trachtman, is a native of New Jersey, and holds a B.S. degree in Display Sciences from the University of Pennsylvania and a Master's Degree in Computer Science. A rugby enthusiast, Jack also skis, enjoys the outdoors, and combines backpacking and camping with geology and studying the features of the earth.



Mary Jo Tillman, Secretary, Radiation Oncology Communications

Diane Kiefer has joined Radiation Oncology as Supervisor of Nursing. A graduate of Jewish Hospital Nursing School, Dianne received a B.A. degree from the University of Missouri and is continuing her education in English Literature at U.M.S.L. Diane's special interest is baseball — especially Lou Brock.



Diane Kiefer

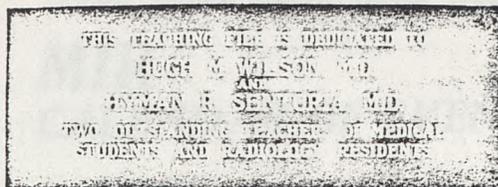


Pat Banjanin

Ms. Pat Banjanin is the new secretary in the physics section of Radiation Oncology. Pat is a native of St. Louis living in the suburb of Webster Groves but for the last two years has lived in Baltimore, Maryland, where she was an executive secretary to Dr. Wilfred H. Townshend, Director of Health Services for the University of Maryland. Pat has a great interest in traveling and has visited England, Ireland, Scotland, Wales, Canada and most of the United States. Among her other interests are interior decorating, collecting music boxes, attending the theater, symphony concerts, picnics and fashion designing.

Mary Jo Tillman, Secretary in Radiation Oncology Communications, received her B.A. degree from Washington University from which she graduated magna cum laude and was elected to Phi Beta Kappa. The recipient of a graduate fellowship, she received her Master's Degree in Classics from the University of Illinois. In keeping with her interest in the Classics, Mary Jo has especially enjoyed European travel and her study of archaeology in Rome. Her hobbies include tennis, sewing and knitting. She plays the violir and piano and particularly enjoys joining in on the guitar with her husband, Ron, who is an accomplished guitarist. Ron is employed by Union Electric and the Tillmans live in Des Peres, Missouri.

HUGH M. WILSON TEACHING FUND



The Hugh M. Wilson Teaching Fund was established by Mallinckrodt Institute in 1968, honoring Dr. Wilson, the second director, and in recognition of his dedication as a distinguished physician and educator. Friends and colleagues of Dr. Wilson donated funds to obtain a portrait of his and to establish an annual award for a graduating medical student in recognition of meritorious work in radiology. As Dr. Wilson did not wish a portrait made, he has recently requested that a portion of these funds be used for augmenting medical student training in Radiology. Accordingly, the Institute will use part of the Hugh M. Wilson Teaching Fund to purchase an American College of Radiology Diagnostic Radiological Health Sciences Learning File for Mallinckrodt Institute. The \$12,500.00 file, to be used by medical students and residents, will also be partially funded by the Washington University Alumni Association in honor of radiologist, Dr. Hyman R. Senturia, who was named "Teacher of the Year" by the Class of 1972 and appointed Alumni Teaching Scholar.

The Diagnostic Radiological Health Sciences Learning Laboratory is an educational system which teaches the basic skills of the three components of a radiographic examination:

1. The selection of the patient for the examination
2. The conduct of the examination, and
3. Interpretation of the results

Swedish Visitor

Dr. Thure Holm, Director of the Section of Medical Roentgentechnology at the University Hospital in Lund, Sweden visited the Mallinckrodt Institute on October 22-24, 1975. Dr. Holm is an expert in radiology departmental planning and gave a talk to our staff and residents on "The Planning and Staffing of Diagnostic Radiology Departments."

The 1975 "Mark III" revised edition reflects the experience of educators in 34 medical schools, teaching hospitals and community hospitals. The lectures provided on patient selection present the information needed by physicians to make informed patient selection decisions. The physics portion of the ARC Learning Laboratory provides radiology residents and others involved in the performance of radiographic examinations the physics background necessary for the proper operation of x-ray equipment.

The "Learning File," consisting of approximately 1,400 cases and 3,600 full sized reproductions of original radiographs, represents a "core" concept of material related to "basic skills" in the interpretive aspects of the radiological examination. On each case a short clinical history and other pertinent information is presented. The cases are divided into six major categories: Skeletal, Chest, Head and Neck, Pediatric, Gastrointestinal and Genitourinary.

The Diagnostic Radiological Health Sciences Learning Laboratory has been installed and actively used to complement the teaching programs in over one-third of the medical schools in the United States. Student reaction has been enthusiastic and gratifying as they recognize its function is to accomplish the primary mission of a medical school — to educate. Interest from other countries has been expressed so that the method may eventually develop as an international communication vehicle.

The dynamic nature of the Learning Laboratory allows it to evolve in conjunction with the field of radiology so that it will always be consistent with the "state of the art."



Hugh M. Wilson, M.D.



Hyman R. Senturia, M.D.

RSNA, 1975

McCormick Place on the Lake

Chicago, Illinois November 30-December 5

The program agenda of the Sixty-First Annual Meeting of the Radiological Society of North America included the following contributions from the Mallinckrodt Institute faculty and residents.

PAPERS

General Diagnosis

"Hyperparathyroid Bone Disease: A Radiologic-Pathologic Correlation." James W. Debnam, M.D., Margaret Bates, B.S., Robert C. Kopelman, M.D., and Steven L. Teitelbaum, M.D.

"The Use of Optical Bar Codes in Radiology." Margaret C. Jost, M.S., R. Gilbert Jost, M.D., R. Martin Arthur, Ph.D., Rexford L. Hill, M.S., and Ronald G. Evens, M.D.

"Building A Radiology Patient Information System: The Modular Approach." R. Gilbert Jost, J.D., Rexford L. Hill, M.S., and Ronald G. Evens, M.D.

Nuclear Medicine

"Imaging of Myocardial Ischemia and Infarction with Metabolic Substrates." Edward J. Hoffman, Ph.D., Edward S. Weiss, M.D., Michael J. Welch, Ph.D., Michael E. Phelps, Ph.D., Michel Ter-Pogossian, Ph.D., and Burton E. Sobel, M.D.

"Detection of Pulmonary Embolism: The Role of ^{133}Xe Ventilation Studies in Radionuclide Diagnosis." Philip O. Alderson, M.D., Naris Rujanovich, M.D., Roger H. Secker-Walker, M.D., and Robert C. McKnight, M.D.

Neuroradiology

"In Vivo and Regional Investigation of Organ Function By Positron Emission Tomographic Imaging of Metabolic Substrates Labeled with Nitrogen-13 and Carbon-11." Michel M. Ter-Pogossian, Ph.D., Ralph Edward Coleman, M.D., John O. Eichling, Ph.D., Edward J. Hoffman, Ph.D., Michael E. Phelps, Ph.D., Marcus E. Raichle, M.D., and Michael J. Welch, Ph.D.

"Evaluation of Ventricular Size in the Remaining Days of Pneumoencephalography." Mokhtar H. Gado, M.D., and Isidro L. Huette, M.D.

"Post-Surgical Computed Cranial Tomography (CCT)." Isidro L. Huette, M.D., Mokhtar H. Gado, M.D., and Arthur B. Jenny, M.D.

Radiation Therapy

"Mechanisms of Failure of Patients with Endo-

metrial Extension from Primary Carcinoma of the Cervix and Evaluation of Adjuvant Surgery in the Management." Carlos A. Perez, M.D., F. R. Zivnuska, M.D., F. Askin, M.D., B. Kumar, M.D., William E. Powers, M.D., and Don P. Ragan, Ph.D.

SYMPOSIUM:

Joint Session With The American Association of Physicists In Medicine.

"Advances in Diagnosis of Cardiac Disease." Michel M. Ter-Pogossian, Ph.D., Moderator.

EXHIBITS:

"Nondestructive Subluxing Arthropathies of the Melacarpophalangeal Joints." William A. Murphy, M.D., David Bartlett, M.D., and Ronald G. Evens, M.D.

"Diffuse Airways Disease in the Adult." Robert F. Scheible, M.D. and John V. Forrest, M.D.

"Patterns of Care in Radiation Therapy." ACR exhibit designed and coordinated by Helen Pares.

WORK IN PROGRESS: GENERAL DIAGNOSIS

"Preliminary Evaluation of the Performance Characteristics of the EMI Total Body Computerized Axial Tomograph." Michel M. Ter-Pogossian, Ph.D.

"Clinical Evaluation of Computerized Transaxial Tomography for the Whole Body: Anatomical Definition and Absorption Coefficients." Stuart S. Sagel, M.D., John V. Forrest, M.D., Robert J. Stanley, M.D., and Ronald G. Evens, M.D.

CATEGORICAL COURSE (GU Radiology)

"The Evaluation of the Poorly Functioning and Non-Functioning Kidney." Robert J. Stanley, M.D.

Dr. Stanley also presented a paper on contrast reactions to the Society of Uroradiology during the same week.

REFRESHER COURSE:

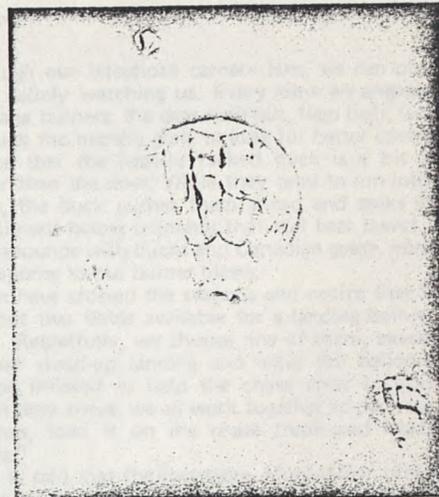
Dr. Michel Ter-Pogossian participated in a course entitled *"Radionuclide Imaging and Computed Tomography of the Brain."*

The R.S.N.A. social agenda included a Washington University Medical Center Alumni Reception at the Palmer House and a dinner at the Cafe Latour for Mallinckrodt Institute residents, staff, and spouses.

Up, Up, and Away!

Nikki Capland, St. Louis' leading balloonist, (her husband, Don, shares the title) describes the adventure and competitiveness of ballooning as a matter of extending oneself beyond what you've previously done, which in her case is extensive. She fences, skis, sails, paints and writes. A wife and mother of three, Nikki is a chemistry instructor in the St. Louis College of Pharmacy.

Her sister, Diane Zaltsman, Secretary in Mallinckrodt's Division of Radiation Sciences commented, "For the last three years, I've been working on a needlepoint rug depicting all the highlights of Don and Nikki's varied careers and hobbies. I hope they slow down soon, the rug is growing to gigantic proportions."



Is Hot Air Ballooning For You?



Nikki Capland

An FAA licensed balloonist, Nikki has logged over 160 hours of flight time and during her four years of ballooning, she has competed in various festivals and championships. She was one of two women to compete in the 1973 National Championships in Iowa and with her family, Nikki flew in the 1974 and '75 Kentucky Derby Festivals and the 1975 Forest Park Balloon Festival.

Ballooning has been described as a sport for the patient and truly adventurous.

A "Charliere" or gas balloon is completely enclosed and is filled with helium or hydrogen. Nikki and Don own a "Montgolfier," (hot air) balloon which gets its lift from heating the air within. Liquid propane, which is fed into the burner system vaporizing coils, is ignited by a small pilot light. This flame serves to heat the air at the mouth or bottom open part of the envelope (balloon canopy).

As the air inside is heated, the balloon becomes buoyant. Then comes the "weighing off" when the crew members check for positive lift by use of the "hands-on" - "hands-off" method. The balloon ghosts its way off the ground. The 150 pound basket holds two to four passengers and has a mahogany or teak floor, approximately ten feet square in size. It is attached to the envelope and supported by means of heavy rope or steel cables.

The skilled balloonist learns to alter his course by changing altitudes to catch different air currents, the directions of which vary as much as 90 degrees. The pilot must pay constant attention to what the environment around him is doing.

By opening a valve the pilot can feed more propane to the burners directly above the basket, heating the air and propelling the balloon upward. Pulling a rope opens an air vent allowing hot air to escape, causing the balloon to settle toward the ground.

The moment he takes off, the balloonist starts looking for potential landing sites. Power lines and unexpected high winds are the two greatest hazards of the descending balloonist.

When we asked Nikki Capland about the 2nd World Hot Air Championship in which she competed in October she vividly described it as: "With the majestic Sandia Ridge in New Mexico providing a backdrop for 250 floating orbs of every conceivable hue and pattern, pilots of 23 nations turned the Albuquerque sky into a kaleidoscope of color that delighted the eye and thrilled thousands of people for a full week of competition."

"Most of us had looked forward to this event most impatiently for this is what modern sport ballooning is all about. Yes, it is definitely an excitement "high" to be sharing the blue with 200 other aeronauts, defying gravity and friction . . . floating in a seemingly effortless fashion above the crowd . . . using whatever skill one possesses to play the winds - shifting altitudes to make 77,000 cubic feet of captured air (7 stories tall) move where you want it to."

To our next question, the inevitable, "What ever made you take up such a crazy sport?", her answer was interesting, and based on a more simple aspect of ballooning. Nikki requested we use our imagination to share a basket with her on a November Sunday afternoon - right here in Missouri.

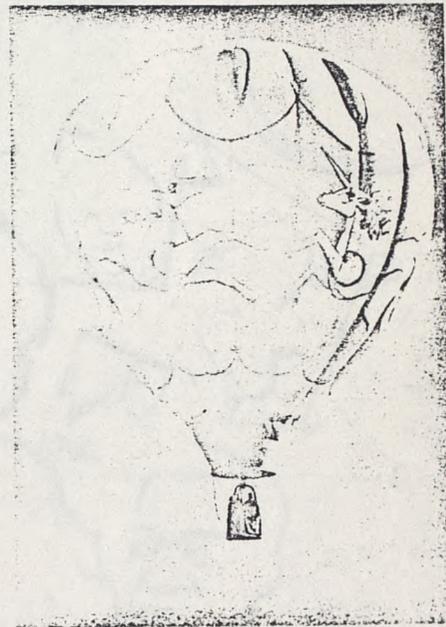
"It's a bit windy as we launch Les Licornes, our Barnes AX-7, but the inflation is smooth and within 15 minutes, we are gently air borne, leveling off at an altitude of about 200 feet. We head northeast away from the Balloonport at Lake St. Louis and for a while, the winds are so swift that it appears we might cross the Mississippi River.

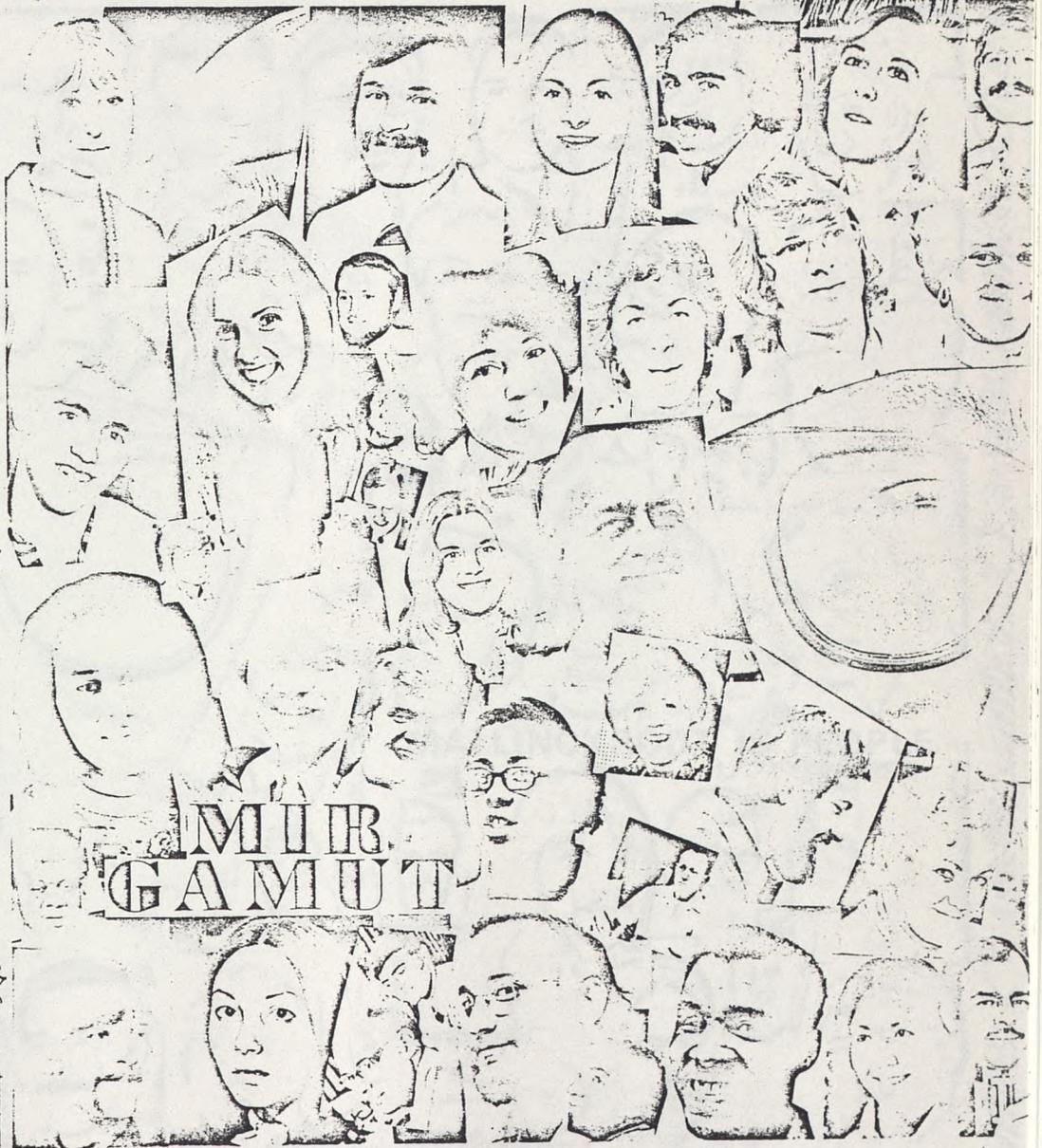
We discover though, that if we drop to about 100 feet above the ground, we tend to veer in a more easterly direction with diminishing wind speed and to our delight we are flying right over the Cuivre River tributaries and marshes. This is wild life country and in a quietly hovering, slowly drifting balloon, we are at one with the elements and even the Red Tail Hawk perched on top of a dead tree is not disturbed by us.

Through our telephoto camera lens, we can observe him, calmly watching us. Every time we engage our propane burners, the deer rush out, flags high, leaping through the marshy grass to look for better cover. We notice that the heavily racked buck is a bit more clever than the does. While they tend to run into the open, the buck pushes them ahead and seeks cover for himself below branches that still bear leaves. The area abounds with ducks and Canadian geese, honking in response to our burner blasts.

We have crossed the swamps and notice that there are but two fields available for a landing before the river. Regretfully, we choose one of them, execute a perfect stand-up landing and leave the balloon envelope inflated to help the chase crew to find us. When they arrive, we all work together to pack up the balloon, load it on the chase truck and head for home."

It is said that the inventors, Montgolfier brothers, had a dream 200 years ago when they launched their first balloon. Nikki Capland has a dream, too, and perhaps, as she shares with us this one experience of quietly and secretly hovering over the earth's treasures, we are in a small way privy to it.



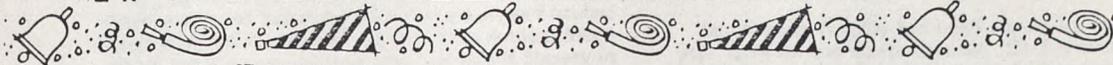


MUR.
GAMUT

1984



MALLINCKRODT IS PEOPLE



WHAT'S UP, DOC?



Dr. Robert J. Stanley was invited back to Caracas, Venezuela as a member of the guest faculty of the Fifth Scientific Meeting of the Hospital Vargas, November 16-17, 1975. He lectured on angiography and computerized axial tomography, as well as visited hospitals in the Caracas area to demonstrate angiographic techniques. Following the meeting, Dr. and Mrs. Stanley enjoyed an additional ten day visit in Venezuela.

Dr. Michel Ter-Pogossian participated in an intensive conference (as a conference leader) on The Future of Medical Imaging at Ipswich, Massachusetts, October 19-21, 1975.

On October 20-23, 1975, Dr. Ter-Pogossian was a faculty member for a Postgraduate Course in Neuro-radiology held in Boston, Massachusetts, where he presented a talk on "Positron Emission Computerized Tomography in the Study of Intracerebral Pathology: Technical Aspects."

Dr. Louis Gilula delivered a paper entitled "Venous Angiography of Subcutaneous Hemodialysis Fistulas: Experience in 75 studies" at the Sixth Annual Meeting of the Western Dialysis and Transplant Society in Las Vegas on September 20, 1975.

Dr. Michel Ter-Pogossian gave an invited talk entitled "Differences in Design Requirements for Head Scanners and Total Body Scanners" at a course on computed tomography held in Chicago, Illinois, November 6-7, 1975.

Dr. Mokhtar Gado presented two lectures during the Computerized Tomography Course at Rush-Presbyterian-St. Luke's Hospital in Chicago held November 6-7, 1975.

Dr. Marcus Raichle presented a paper at the November meeting of the Society for Neuroscience in New York City. The paper, entitled "Central Noradrenergic Regulation of Brain Microcirculation," represents a continuing collaborative effort between the Division of Radiation Sciences (Drs. Raichle and John Eichling) and the Department of Psychiatry (Dr. Boyd Hartman.)

Dr. Louis Gilula presented an exhibit entitled "Venous Angiography of Hemodialysis Fistulas — Experience with 72 Studies" at the American Roentgen Ray Society in Atlanta, September 30 - October 3, 1975.

"Contrast Enhancement — It's Mechanism and Use in Diagnosing Intracranial Tumors" was presented by Dr. Mokhtar Gado at the meeting of the Brain Tumor Study Group, N.I.H., Bethesda, Maryland.

Dr. John Arnold has recently been appointed Chief of the Nuclear Medicine Division, Department of Radiology, Flinders Medical Center, Adelaide, South Australia. Dr. Arnold was a Fellow in Nuclear Medicine at the Institute during 1972-73.

Dr. Marcus Raichle has been appointed to a four year term on the Neurology (A) Study Section, Division of Research Grants, NIH.

Dr. Hsiu-san Lin, Assistant Professor of Cancer Biology in Radiology has been appointed as Assistant Professor of Microbiology and Immunology.

Dr. Mokhtar Gado served as an associate examiner for the Board of Neurological Surgery, November 17-19, in Memphis, Tennessee.

Dr. Marcus Raichle has been appointed to a three year term on the Cardiovascular (D) Research Study Committee of the American Heart Association.

Aloha! Dr. Smith

While many of the Mallinckrodt staff were tossed and buffeted about by the chilling winds and snow of Chicago as they "brushed up" their radiologic prowess at R.S.N.A., Dr. Emily Smith followed the sun to Honolulu, Hawaii for the American Medical Association meeting.

OFF STAFF

Dr. Jose Maria V. Sala joined the University of New Mexico School of Medicine as Medical Director of the Cancer Research and Treatment Center, effective October 24, 1975. Dr. Sala served as Consultant in Radiation Oncology to the Mallinckrodt Institute from 1965-1975.

Dr. Alexander A. Cacciarelli has joined the staff of the William Beaumont Hospital in Royal Oak, Michigan where he will head the section on pediatric radiology. Dr. Cacciarelli completed a three-year residency in diagnostic radiology at the Mallinckrodt Institute and then remained on the staff at the Institute as an Instructor in Radiology in the section of pediatric radiology until August, 1975.

Dr. Michael E. Phelps and Dr. Edward J. Hoffman joined the staff of the Hospital of the University of Pennsylvania in Philadelphia on November 1, 1975. Dr. Phelps assumed a position as Associate Professor of Radiation Physics in the Department of Radiology and Associate Professor of Biomedical Engineering, and Dr. Hoffman is an Assistant Professor of Radiation Physics. Dr. Phelps had been at the Mallinckrodt Institute for five years and at the time of his departure was an Associate Professor of Radiation Sciences. Dr. Hoffman had spent three years at the Institute as an NIGMS Fellow in Radiation Science in Radiology.

PROMOTIONS

Dr. Hsiu-San Lin, Assistant Professor of Cancer Biology in Radiology has also been appointed as Assistant Professor of Microbiology and Immunology, effective September 1, 1975.

Dr. Guillermo G. Geisse was promoted to the rank of Assistant Professor of Radiology, effective October 1, 1975.

CARMEN LECTURE

The 1975 Carmen Lecture, sponsored by the Greater St. Louis Society of Radiologists was given on November 19 by Dr. Herbert Abrams, Professor and Chairman of the Department of Radiology at Harvard University. Dr. Abram's topic was the "Dissecting Aortic Aneurysm; A Diagnostic and Therapeutic Problem."



Radiation Oncology Lecture

The Mallinckrodt Institute Division of Radiation Oncology presented Dr. Haim I. Bicher, Associate Professor of Pharmacology and Resident in Radiation Therapy at the University of Arkansas Medical Center, as guest lecturer on November 25, 1975. Dr. Bicher's talk was entitled "Microcirculation Tissue Oxygenation, and Radiation Therapy."



Ann Stanley, daughter of Dr. Robert Stanley, swam 200 laps in the Sugar Creek Swim Club Swimathon, along with fellow team members, to benefit St. Louis Children's Hospital. Many members of the staff at MIR pledged contributions based on laps, for which Ann and the SCSC were grateful.

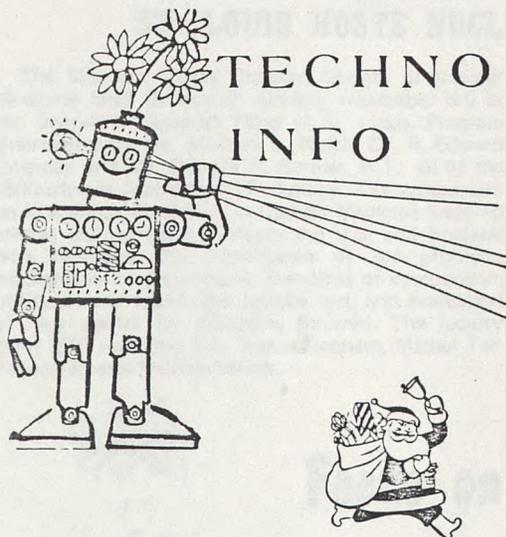
NEW STAFF

Dr. Albert E. Hesker joined the staff of the Mallinckrodt Institute as an Instructor in Clinical Radiology, effective October 1, 1975.

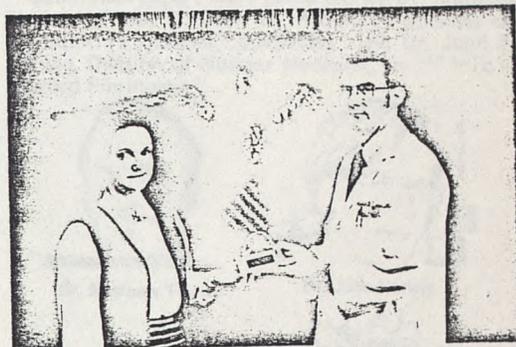
Dr. Gary T. Ratkin was appointed as an Instructor in Clinical Radiology, effective August 1, 1975.

ALUMNI NEWS

Dr. Robert S. Francis (Co-Chief Resident at the Institute, 1972-73) was appointed Assistant Professor of Radiology and Chief of Angiography at the Vanderbilt University Hospital on July 1, 1975. The Francis' first child was born on June 12, 1975, an 8 lb. 9 oz. boy - Janson Westcott Francis.



In Appreciation



Coretta Schroer, R.T., President, 4th District M.S.R.T. presents a token of appreciation to Dr. Ronald G. Evens, guest lecturer for the September meeting.

THIRD ANNUAL DIAZ PROFESSIONAL EDUCATION LECTURESHIP

In April of 1973 a group of interested technologists in the Fourth District of the Missouri Society of Radiologic Technologists established a lectureship in the name of Armand Diaz, R.N., R.T., F.A.S.R.T. They did so in recognition of the many contributions Mr. Diaz has made to the profession and with a desire to bring each year to the Fourth District Society a speaker of national prominence who would in effect bring the Society to the membership.

This year, following both the spirit and goals of this lectureship, Marilyn Fay, RT, Director of Continuing Education for the American Society of Radiologic Technologists, delivered the lecture, "Continuing Education — Way of Life or Passing Fancy" on October 16, 1975. Ms. Fay pointed out that the Evidence of Continuing Education (ECE) is an innovative, viable program which has purposely been kept flexible so that it might grow with the future. The philosophy behind ECE — that of staying abreast of changes in radiology technology, and public accountability regarding radiation safety and quality health care — was readily accepted by the technologists and pertinent questions asked concerned its

implementation. The expectation of radiology technologists interviewed is that the ECE will have a very positive effect on their professional standing in the allied health community and that its impact will certainly be felt in the near future.



Pictured left to right are Marilyn Fay, R.T., guest lecturer, Armand Diaz, R.N., R.T., F.A.S.R.T., and Coretta Schroer, R.T., President, 4th District M.S.R.T.

ST. LOUIS HOSTS NUCLEAR MEDICINE SYMPOSIUM

The Missouri Valley Chapter, Society of Nuclear Medicine held its annual meeting, November 8-9 at the Sheraton Westport Plaza in St. Louis. Program chairmen were Dr. Michael J. Welch, Dr. R. Edward Coleman and Mr. Donald R. Bernier, R.T., all of the Mallinckrodt Institute of Radiology. The symposium on Thrombus Detection in Nuclear Medicine featured several invited speakers from the U.S. and England who reviewed the significance of the problem, mechanisms of thrombosis, standards of comparison, utility of the fibrinogen uptake test, and evaluation of new agents for detecting thrombi. The faculty from MIR included Drs. James Debnam, Michel Ter-pogossian, and Michael Welch.

Submitted papers were presented by Dr. Matthew Thakur of the Division of Radiation Sciences on "Indium-111 Labeled Leukocytes" and Dr. John F. Harwig, Division of Nuclear Medicine, on "^{99m}Tc - Labeled Fibrinogen."



Dr. Matthew Thakur



Dr. John Harwig



Focus on New Faces



Patricia Skala, 4th Floor Receptionist



Cindy Keathley, Film Librarian



Debbie Brown, Mail Clerk



Dianne Rominous, Scheduling Clerk, Evening Shift



Maureen Harris, Scheduling Clerk



ASTR IN SAN FRANCISCO

The American Society of Therapeutic Radiologists (ASTR) recently held their annual meeting in San Francisco, California. In addition to the usual format of the formal presentation of papers, a series of scientific workshops and demonstrations was held with participation of hospitals and universities throughout the country.

Members of the Physics Section and Clinical Staff of Mallinckrodt's Division of Radiation Oncology presented the following workshops:

"Contouring Techniques for Radiation Therapy Treatment Planning." Donald E. Velkley, Ph.D., George D. Oliver, Jr., Ph.D., and William E. Powers, M.D.

"Afterloading and Mold Techniques in the Treatment of Head and Neck Cancer." James E. Marks, M.D., Fransiska Lee, M.D., Helen Fotenos, B.S., George Oliver, Jr., Ph.D. and Donald Velkley, Ph.D.

"Physical Characteristics and Clinical Uses of Electron Beam Therapy." James A. Purdy, Ph.D., James E. Marks, M.D., Glenn P. Glasgow, Ph.D., Carlos A. Perez, M.D.

"Clinical Use of Compensating Filters." George D. Oliver, Jr., Ph.D., William B. Mill, M.D., James A. Purdy, Ph.D., and James E. Marks, M.D.

The following talks were presented at the ASTR meeting:

"Effect of Segmental or Whole-Body Irradiation in the Immunological Response to a Murine Lymphosarcoma." Carlos A. Perez, M.D., Carlton C. Stewart, Ph.D., and Barbara Wagner, B.S.

"Analysis of Tumor Dose and Volume Irradiated in the Failure of Patients with Carcinoma of the Nasopharynx or the Tonsil Following Treatment by Irradiation Alone or in Tonsillar Carcinoma by Preoperative Irradiation and Surgery." Carlos A. Perez, M.D., Fransiska Lee, M.D., James Purdy, Ph.D., Alvin Korba, M.D., and William E. Powers, M.D.

"Extended Field Radiation Therapy in Hodgkin's Disease: Analysis of Sites of Failure." William B. Mill, M.D., Lily A. Hanes, M.D., James A. Purdy, Ph.D., and Thomas W. Tillack, M.D.

"Rapid Pre-Operative Radiation Therapy in Carcinoma of the Urinary Bladder." Bruce J. Walz, M.D., Carlos A. Perez, M.D., William E. Powers, M.D., and Robert Royce, M.D.

"Natural History of Patients After Abdominal Perineal Resection for Carcinoma of the Colon: Implications for Radiation Therapy." Eric Lindstrom, M.D., Bruce J. Walz, M.D., Harvey Butcher, M.D., and Robert Baglan, Ph.D.

The usual material was prepared by Helen Pares, Audio-Visual Assistant in Radiation Oncology.



Chris Van Doren, second floor film librarian, is a graduate of Lindbergh High School and has attended Meramec Community College. She enjoys sewing and cooking and has traveled to Florida and Bermuda.



Focus on New Faces

John Harvey, Manager of Billing and Insurance for Radiation Oncology, holds a B.S. degree from the University of Missouri (Columbia). He is married and has one daughter, age five. John's favorite hobby is coin collecting.



Karen Green, Medical Coder in Radiation Oncology, previously studied nursing at St. Louis University. Her hobbies include bowling, crocheting, and piano.



SPIRIT OF '76

"Look for Donna Troeckler's
Bicentennial Exhibit in January '76."

Miss Nancy Craig, Administrative Assistant, Records, has recently been named to the Washington University Alumni Board of Governors. She will represent the Washington University School of Medicine's Program of Health Care Administration.



Louise Griffin, fourth floor film librarian, recently returned from an eight-day tour to Albuquerque, New Mexico.

NEW ARRIVAL

Dr. and Mrs. Bruce J. Walz announce the arrival of a daughter, Rachel Elizabeth Walz, on November 7, 1975. Rachel has a four year old sister, Jennifer Mara.

ANYONE FOR KIBBIES?

Spicy Lebanese rural cuisine is served up every Wednesday and Friday, 11-4:30 p.m. by a group of dedicated ladies of St. Raymond's Maronite Rite Church, 931 Lebanon Drive (off Chouteau at 10th Street). Enthusiastic guests describe the kibbies as "fantastic"! Whether one eats kibbie aras (fried) or maybe (raw), the culinary dish is a breaded shell stuffed with hamburger and onions, with a touch of lemon. All proceeds from the luncheons go toward their new church building.

Wedding Bells

Paul Hanson, Junior Staff Technologist, and Jean Salmo, Secretary to Dean Kenton King of the Washington University Medical School, were married on October 11, 1975.



Sue Clover, Receptionist in Queeny Tower, was married on November 8, 1975 to Dallas Smith of Cedar Hill, Missouri.



Tim Cuff, R.T., and Martha Jane Faith were married on June 14, 1975. They visited Estes Park and Manitou Springs, Colorado on their wedding trip.



Joe Love, Assistant Electronics Technician, and Sandra Epperson, Administrative Secretary at Ralston Purina, were married on September 6, 1975.

WHO'S NEW in Radiation Oncology?



Millicent Bluford, Medical Coder



Jayne Graves, Billing Clerk



Terry Proffer, Physicians Assistant



Bill McLellan, Student Research
Technician, Cancer Biology



Shu-fe: Chen, Cancer Research Technician



Marita Sykes, File Clerk



Lenore Albee, Data Entry



Dateline Honolulu

by Dr. John Cieply,

MIR, '75



When asked to contribute my version of "Tales of the South Pacific," who could resist being the first "foreign correspondent" in Focal Spot history. So I thought that I would try to share with you some of my early impressions of life as an Army officer in Hawaii.

As you may know, when residents like Hauser and deSevilla graduated and left MIR to win fame and fortune in private practice, I was inducted as one of the last "obligated volunteers" in the Army medical corps. Only 29 more radiologists owe their souls to Uncle Sam in this manner . . . so watch out, Fuller and Davis, the draft may come back. And now while people like Joe Bradley and Kerry Shipley are ruining their bodies with high living in St. Louis, I am charged with protecting America. But enough of this self pity . . . what is living in Hawaii like?

The weather is about as close to ideal as you could imagine. Occasionally it clouds up and rains, but the clouds pass rapidly because of the trade winds and it is rare that on hot days there is no breeze to cool you. This is being written in November and I have not noticed an appreciable difference from August. Boring, you might say, and I would agree, if you get tired of sailing, diving, golfing, playing tennis, or just plain sunning yourself. But unless you really love doing these kinds of things, stay home. Because although there is more live entertainment, fine restaurants, and night spots than you need, they are quite expensive.

The economy is the one thorn in paradise. Everything must be shipped a minimum of 2000 miles (except pineapples) and we all pay for it. A double scoop of B&R ice cream is 74¢ and the average cost of a single family home is \$75,000. Now you know why everyone goes to the beach. Another adjustment some people have to make is being a member of a minority. The islands are overwhelmingly Japanese and Chinese in addition to native Hawaiians, Tahitians, and Samoans. In addition to their obvious difference in physical appearance, the locals use a pidgin dialect that often makes the haule (white man) feel like an interloper.

Casual is the key word here. Ties are very infrequently worn (except by bankers) and even some

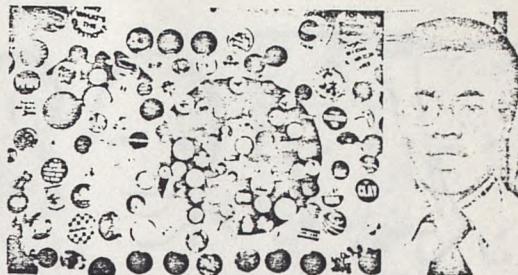
private doctors make rounds wearing aloha shirts, sandals, and puka shell necklaces. People generally remove their shoes when they enter your house and you do not feel strange at all sitting barefoot in someone else's living room. This type of life style carries over into all aspects of island life and there is a general feeling of polynesian paralysis that grips everyone, making for a visible slowed pace. For instance, the 10 o'clock T.V. news comes on anywhere from 10:05 to 10:15.

But the true essence of Hawaii is its beaches. The island is ringed by innumerable unions of sand and surf, each with a distinct personality of its own . . . from famous Waikiki, crowded, touristy, but where the sun nearly always shines to Hanauma Bay where breathtaking snorkeling is only yards away to Makapuu with incredible body surfing is Sunset with its legendary surfers and 50 foot waves in the winter. The water temperature is close to perfect and varies only one degree throughout the year. And not even pro football can ruin a day at the beach since games start at 8 a.m. and are over by noon on Sundays.

But life is not all games, and I must help defend America, too. Tripler Medical Center is the medical pearl of the Pacific and we have cases flown in from Bangkok to Pago Pago with diseases like paragonimiasis and meliodosis (attention Jack Forrest) which I never heard of but people here list first in choice. So the interesting cases are here and the Army is always educating us. For example, they are sending me to a G.U. radiology course in Aspen, Colo., next February.

But I do not mind giving up a few years of my life to serve my country, because in a way I feel like I am doing this for all of you back there, safe on the mainland. So when the snow comes and the parking lot is icy, think of us servicemen, 5000 miles from home, sailing or surfing or sunning or . . .

WHO'S GOT THE BUTTONS?



Mike Ward's Got the Buttons

THE LONG AND THE SHORT OF IT

The New Hairdo Changeover



Corliss Fischer



Kathleen Johnson



June Bodeman



Bertha McKinnis



Sandra Tolen



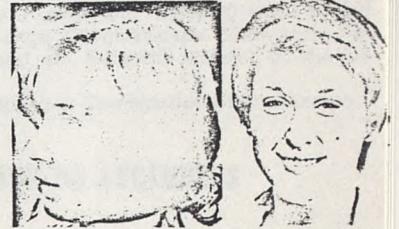
Carolyn Potter



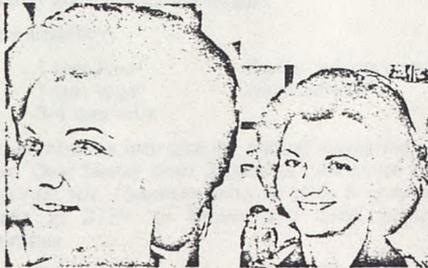
Jane McBride



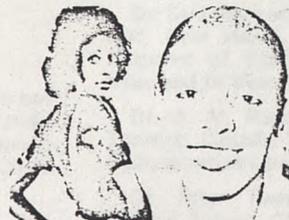
Debbie Blanks



Barbara Thompson



Carol Pohlman



Bettye James



Ann Brock

"In Sunny Phoenix"
**MALLINCKRODT ALUMNI
REUNION**

March 3 - 7, 1976

The Arizona Biltmore

"One of the few great resorts left in the world."

Palm lined 18 hole golf course . . . Tennis day or night . . .
Horseback riding through desert and mountains . . . Superb
cuisine . . . Health clubs . . . Lawn bowling . . . 1200 acres for
basking in the warmth of the Arizona sun . . .

Meeting sessions oriented toward practical aspects of business
radiology including the use of computer systems.

Meeting open to MIR alumni, Washington University alumni,
radiologists in the St. Louis area, their friends, associates and
families. No registration fee for current residents, fellows, or
those in military service. Registration cost: \$35.00

ADDRESS ALL CORRESPONDENCE TO:

John V. Forrest, M.D.
Mallinckrodt Institute of Radiology
510 S. Kingshighway
St. Louis, Mo. 63110



**"LIBERATED" (FORMERLY LAZY)
WIFE'S COBBLER**

Melt 1 stick margarine in pan.

Mix together:

1 cup flour	2 teas. baking powder
1 cup sugar	pinch of salt
3/4 cup milk	

Pour mixture into pan of melted margarine - do not
stir. Over batter pour 2 cups of fruit (juice included).
Do not stir. (Sweeten fruit to taste if unsweetened.)
Bake at 375° 'til brown and done, about 35-40
minutes.

This recipe is offered by Rose Robinette, 2nd
floor special procedures nurse. It's rich, tasty, and
Dee-licious!!

**MEETINGS AND LECTURES
BY THE STAFF OF
THE SECTION OF CANCER BIOLOGY**

September 8-24

Dr. Carleton C. Stewart - 10th Leukocyte Culture
Conference, Amsterdam, Netherland and 7th Inter-
national RES Congress in Pomplonia, Spain.

"Interaction of Macrophages with Tumor Cells."

September 18 & 19

Dr. Frederick A. Valeriote - Study Section Meet-
ing in Bethesda, Md.

September 21-25

Dr. Alexander Nakeff - Cell Culture Congress in
Birmingham, Alabama.

"Effects of Chemotherapeutic Agents Pluripotent
and Committed Hematopoietic Stem Cells: Cyclo-
phosphamide."

October 17, 18 & 19

Dr. Frederick Valeriote - Southeast Cancer Study
Group in Birmingham, Alabama.

November 4-6

Drs. Frederick Valeriote, Alexander Nakeff, Palmer
Stewart, Gerry Freriks and Karen Brandt - Cell
Kinetics and Cancer Chemotherapy Conference, An-
napolis, Maryland. Dr. Valeriote lectured on the fol-
lowing:

"Drug Scheduling in Combination Chemotherapy."

VISITING LECTURERS

Dr. J. Stephen Haskill, University of South Caro-
lina, Charleston, South Carolina, "Host Immune
Responses within solid tumors."

Dr. Sara Rockwell, Yale University School of Medi-
cine, New Haven, Conn. "Factors Influencing the
Response of EMT6 Tumor Cells to Irradiation In
Vitro and In Vivo."

Dr. A. M. Rauth, The Ontario Cancer Institute,
Toronto, Canada. "Studies on Hypoxic Cell Specific
Radiosensitizers In Vitro and In Vivo."

Dr. Peter Twentyman, University Postgraduate
Medical School, Cambridge, England. "The Relative
Sensitivity to Chemotherapy of EMT6 cells in solid
Flank Tumors and in Exponentially Growing Lung
Nodules."



Merry Christmas

**AJR Christmas
Party - December 19
4 - 7 pm
Eighth
Floor
AJR
music
refreshments**



FOCAL SPOT IN

Published quarterly by the Public Relations Department for staff, students, and friends of Mallinckrodt Institute of Radiology, 510 South Kingshighway, St. Louis, Mo. 63110

Virginia R. Trent
Editor & Writer



Norm Hente
Photographer



Deen Getz
Graphic Art

Published by
The Public Relations Department of
The Edward Mallinckrodt Institute of Radiology
510 South Kingshighway
St. Louis, Missouri 63110

Non-Profit Organization
U.S. Postage
PAID
St. Louis, Missouri
Permit No. 1032

Address Correction Reque