Color-enhanced brain images generated by computer in the Laboratory of Neuro-Imaging can be rotated to display any angle and plane. All images are derived from computer-converted autoradiograms of brain slices. See story beginning page 12. (Photos courtesy Arthur Toga)
In the Beginning...

A physician-historian, Kenneth Ludmerer has conducted nearly a decade of research to reveal the genesis of modern medical education. In the process, he has exposed the mythical underpinnings of some widely believed traditional dogmas.

Medical Marketshare

Medical center hospitals, eager to retain and expand their marketshare, seek new ways to provide improved medical care. Academic hospitals can compete in every arena with their non-academic counterparts and, in many cases, have led the way in developing new programs and marketing strategies.

Window to the Brain

Researchers from inside and outside the School of Medicine can view the brain from a unique vantage point: the Laboratory of Neuro-Imaging. Using software written by LONI director Arthur Toga, scientists can achieve high-resolution images in order to understand how neurological diseases originate.

Profiles and Predictions

Using specific information about a woman — her age and data from her medical history, for example — researchers can more closely predict her vulnerability to breast cancer. How? By using computer programs developed from a collaboration between a medical scientist and mathematicians.

Ernie Simms: Against the Odds

A black man without a college degree earned a tenured faculty position at the School of Medicine. But Ernie Simms, a member of Arthur Kornberg’s Nobel Prize-winning team, earned more than kudos for his scientific research, as his former students and colleagues attest.

Studentstage: Hot Docs

Newsbriefs

The Alumni Report

Class Notes
Modern medical education isn't really modern. Although it's been called many things, it's actually a century-old product of an historic union among three entities: medical schools, universities and teaching hospitals. As with all mergers, the partners underwent changes that were molded and influenced by external factors — they had to reach maturity before they were ready for each other.

Most people regard the Flexner Report, written by Carnegie Foundation researcher Abraham Flexner and published in 1910, as the beginning of a new era in medical education. But the truth of the matter, says Kenneth M. Ludmerer, M.D., is that modern medical education had its beginnings earlier: "In 1910, when the Flexner Report was issued, the overall condition of medical teaching in this country was very good. In fact, it was at the highest point it had ever been. Indeed, medical educators were glowing with satisfaction as to how much things had progressed in the preceding 20 or 25 years. Modern medical education in the U.S. had already arrived."

The inflated importance of the Flexner Report is only one of the myths exposed in Ludmerer's new book, Learning to Heal: The Development of American Medical Education.* Ludmerer, who carries a joint appointment in two departments — medicine and history — has spent nine years poring over archival records, traveling across the U.S. and recording his findings, in order to discover the roots of "modern" American medical education. He has traced medical education's true lineage and found that it was derived from an ever-widening circle of sociological changes that began after the Civil War.

Until medical schools created full-time faculty positions in pre-clinical and clinical departments, they were not the legitimate educational institutions with which universities desired to affiliate. And until well-prepared students desired admittance to medical schools, the calibre of medical education was by definition low. Only with the strengthening of all levels of education — primary, secondary and beyond — did modern medical education become a possibility.

Another necessary ingredient was money. American philanthropy made possible the maturation of university-based medical schools and of teaching hospitals. With an endowment, medical schools and hospitals could perform research, a vital component of good education. Once all the components were ready — the restructuring of the entire school system (including medical schools), the infusion of philanthropy that strengthened floundering educational institutions and hospitals, and the rise of academic medicine — could modern medical education take place in America. But before this could happen, a change in the role of the hospital had to take place.

By 1910, when the Flexner Report was first issued, many of the worst medical schools of the era — the proprietary schools, run for profit by private practitioners — were already dying out. Indeed, at the time, they comprised only about a fourth of the schools in existence. "In the five years preceding the Flexner Report," points out Ludmerer, "30 proprietary schools had died. By 1910, they represented the bottom tier, with university-based schools at the top. But the fact that Flexner focused on proprietary schools, and was so startled in his prose and description, caused people to think that his comments characterized all of medical education in America."

In reality, says Ludmerer, medical schools had already come a long way by 1910. The scientific, or pre-clinical, component of medical education had already progressed to the point where students "learned by doing"; laboratory learning occurred side-by-side with lectures. And many proprietary schools had succeeded in becoming part of the university system. But it was the clinical part of a student's training that was anemic. Many medical students graduated without ever having had the chance to follow, and care for, patients who were hospitalized. "Section teaching — the forerunner of clinical clerkship — was widely implemented, as was dispensary teaching — the outpatient clinics of the day. These innovations were in themselves a great advance compared to 1870 and 1880, when clinical instruction was by lecture alone. But it was not as significant a change as was the laboratory in scientific teaching, and that was what was needed.

"But the nineteenth century hospital was much different from the hospital we know today," continues Ludmerer. "At that time, very little medical care was delivered in hospitals — it was still done at home. Middle- or upper-class women would deliver children at home, physicians would do operations at home. A hospital was more a domicile for the deserving poor. Most hospital admissions were for chronic conditions, and duration of hospital stay was long."

Thus, medical care delivery was not a function of hospitals, but moral uplift was. Says Ludmerer: "Perhaps the best description characterizing nineteenth-century hospitals is paternalistic. In one sense that's good, because the patient is considered to be more than just a liver disease or a heart disease. But there are negative implications — who wants someone to tell you how to run your life, or what you should believe, especially at a time when you're most vulnerable?"

However, with advances in scientific knowledge as the basis for medical practice, this role of the hospital began to change. "The 1880s was the decade of transition," says Ludmerer. "The germ theory of disease was formulated, and surgery became safer. Hospitals became less a social service agency, and began to adopt their present-day role as factories to deliver medical care. As this happened, hospital trustees also changed roles.

"A modern hospital’s trustees meet periodically to approve policy, and they’re involved in fund-raising. But in the nineteenth century, trustees would visit the hospital daily," discloses Ludmerer. "They would be involved in the
minutiae of taking care of patients in the
day-to-day routine.

“There was a discipline in hospitals
then,” recounts Ludmerer. “You couldn’t
make any noise for, if you did, the head
nurse would chastize you, regardless of
whether you were a subordinate employ­
ee, patient or visitor. A very rigid, disci­
plined, small-family-like atmosphere
existed. To add medical students would
be very disruptive to an orderly
environment.”

But the role of hospitals and the educa­
tion of medical students were both due for
a dramatic change.

New Directions

The establishment of Johns Hopkins
medical school and hospital marked the
first occasion of what was to become a
lasting trademark of medical education: a
university-based medical school affiliated
with a teaching hospital. This event,
which took place in 1893, was the first
completely successful marriage of what
had been two separate, distinct and unre­
lated entities. The hospital at Hopkins be­
came the leading center of patient care in
the U.S., says Ludmerer, “largely because
of the muscle of Johns Hopkins medical
school behind it.”

It wasn’t just the good quality of scien­
tific and clinical instruction at the new
institution which made Hopkins outstand­
ing. It was the addition of a third com­
ponent: research. “Keep in mind that the
large hospitals, who want to be the promi­
ent institutions of their generation, now
are saying that the way to achieve recog­
nition is by fostering research. The Hopkins
hospital and the medical faculty doing re­
search received enormous attention from
the press and public, unlike other hospi­
tals in the area which didn’t see research
as part of their mission. The public ac­
cepted research as a hospital’s function,
and that was vital. Now, they didn’t mind
going to the hospital.” The establish­
ment of the Johns Hopkins hospital cemented
a radical change: Hospitals were no longer
part of the social service system, they
were part of the medical system.

The affiliation of Johns Hopkins hospi­
tal and medical school set a precedent that
others were quick to follow. Ludmerer
points to three events he calls “semenal
unions” — affiliations between medical
schools and hospitals — that marked the
crest of a wave that was to sweep out to
sea all the remaining proprietary schools,
and change hospitals’ missions, once and
for all. These seminal unions were be­
tween Columbia College of Physicians
and Surgeons and Presbyterian Hospital
in New York; Harvard Medical School
and Peter Bent Brigham Hospital in Bos­
ton; and the affiliation of Barnes Hospital
and Children’s Hospital with Washing­
ton University School of Medicine in
St. Louis.

In 1910, two years before Washing­
ton University signed contracts with Chil­
dren’s Hospital and the then-planned
Barnes Hospital, there were six medical
schools in St. Louis: four proprietary
schools and two university-based schools,
Washington University and St. Louis Uni­
versity. Some of the proprietary schools
approached the trustees making plans for
Barnes Hospital, but were turned down.

“The fact that even weak schools wanted
hospital affiliation shows that the ideas
about how medicine should be taught
were already pervasive, even before the
Flexner Report,” concludes Ludmerer.
And with the affiliation of medical
schools and hospitals came a revolution in
academe: the establishment of full-time
departmental departments in which clinicians
divided their time between teaching and
research. For the first time, clinical teach­
ing was not the sole province of private
practitioners.

The marriage between academic medi­
cine and teaching hospitals bastardized
proprietary medical schools which were
unsuccessful in achieving hospital affilia­
tion. Rural medical schools which had
no hospitals in their environs, and the
already-sickly proprietary schools,
succumbed. As a result, the number of
medical schools began to drop.

The public knew that the proprietary
schools were weak, and that was why
enrollment was low; students sought the
stronger schools. As soon as a medical
school affiliated with a teaching hospital
—a union catalyzed by the addition
of an endowment — enrollment climbed.

University-based medical schools
sought hospitals with fervor. They courted
and wooed, sometimes successfully and
sometimes not. “There were profound
economic advantages for medical schools
and hospitals joining forces. Both gained
financially from mergers, and that was a
very powerful incentive. However, the
marriages had lots of strains and, al­
though the good outweighed the bad, they
were far from idyllic.

“Medical schools achieved what they
desired,” surmises Ludmerer. “So did
dhospitals. There were no divorces. But
enormous feuding, squabbles and ten­
sions existed that continue today. Hospi­
tals and medical schools, despite their
bonds, have their own agendas, needs and
goals. Sometimes they’re in synchrony,
sometimes they’re not. Most of the prob­
lems center around how to use available
funds.

“For example, do you want to use
money to create a nice environment for
patients and their families, or do you want
to build research labs? Do you want to put
funds into the physical plant, or do you
want to hire more research personnel?
How many paying patients should you
have?”

These questions plague every academic
medical center, says Ludmerer. And
they’ve existed since the first day of the
marriage, over a century ago. “How much
responsibility should medical students be
given? You give them a lot if you want to
foster independence and learning by
doing. But you really want to supervise
them closely if you’re thinking about
the patients.”

These are questions in which Ludmerer
has more than just a scholarly interest. On
staff at Barnes Hospital, he is responsible
for supervising medical students and
house staff.

“These issues, so much in evidence
today, have been there all along,” con­
cludes Ludmerer. “But the marriage be­
tween teaching hospitals and medical
schools, by and large, has been good. The
centrifugal forces — the ones that pull to­
gether — are stronger than the centrifugal
forces that would pull them apart.”

Kenneth M. Ludmerer, M.D.
There's a question of paternity that Ken Ludmerer would like to see settled. His new book, *Learning to Heal: The Development of American Medical Education* answers the question of whose influence was most seminal in the development of modern medical education. Ludmerer stresses that the birth of modern medical education was not due to the influence of only one person. There were many forces that shaped it: the rise of the modern university and an academic elite; the affiliation between university and medical school, and between medical school and teaching hospitals; and the leavening provided all these entities by American philanthropy. But is there one individual who, more than another, sired modern medical education?

It wasn't anyone in the AMA, says Ludmerer, and it wasn't Abraham Flexner, whose report of 1910 is popularly believed to have been a turning point in medical education. Rather, the premier figure is a rather obscure physician who brokered the marriage between Johns Hopkins Hospital and Medical School in 1893.

John Shaw Billings, says Ludmerer, "was a much more seminal figure in medical education than Abraham Flexner. The irony is that everyone knows about Flexner, but only a few know about Billings." Billings' importance derives from two facts: He was among the first Americans to have modern ideas about what should constitute medical education (teaching, research and patient care), ideas which he put forth in the early 1870s, far before Flexner wrote his famous report; and, even more importantly, Billings was able to translate his ideas into action when he established Hopkins' medical school and teaching hospital.

Ludmerer says that statistician and public health expert Billings is a little-known figure for several reasons. Except for a few years after the Civil War, he did not practice medicine. And he didn't stay at Johns Hopkins. Never affiliated with any medical school, he spent much of his time based in the Surgeon General's office. Thus, he never achieved the status of a Walter Cannon or William Osler, renowned figures in medicine.

Furthermore, many of his endeavors were outside the realm of medicine. In addition to establishing Index Medicus and the National Library of Medicine, he was the creator and first director of the New York Public Library. "He's the most multi-talented physician ever to have lived, I think," says Ludmerer. The ultimate irony is that Johns Hopkins has only belatedly acknowledged the debt it owes Billings. The most recent addition to its edifices which stand in testimony to the great clinicians of Hopkins' early years — Osler, Halsted, Welch — is a new administration building named after John Shaw Billings.

Thus, the man who founded Johns Hopkins Medical School and Hospital, and later acted as consultant to New York's Presbyterian Hospital, urging it to affiliate with Columbia College of Physicians and Surgeons, remains relatively unknown. Abraham Flexner wrote an attention-getting report but did not play a creative role in developing modern medical education (although he did influence Robert Brookings to modernize Washington University's medical school and bring about its affiliation with Barnes Hospital). Yet it is Flexner, rather than Billings, who is likely to retain the title, Father of Modern Medical Education.

(*C* *Learning to Heal: The Development of American Medical Education* is a publication of Basic Books: New York, 1985.)
Every Monday, the 7400 floor at Barnes Hospital used to be crowded with eye patients, occupying rooms on both sides of the hall. By Wednesday, those patients — most of them admitted for cataract surgery — were spilling over to rooms on other floors. But three years ago, then-chief resident Lawrence Gans, M.D., performed the first outpatient cataract surgery. With the rapid development of new technical advances came a steep decline in the number of hospitalized eye patients. "Now we typically have patients in rooms on one side of the floor, and we sometimes don't even fill those because all of the procedures once done in great numbers by the eye service are now available on an outpatient basis," says Gans, assistant professor of ophthalmology.

Clinical developments like this one have been quietly making possible far-reaching changes in the way that the medical center does its business. And the clinical changes have been matched by still greater economic and competitive pressures which have placed the center in an unfamiliar — and sometimes uncomfortable — position: forcing it into an intense drive for efficiency, a scramble for business to retain its market share, and a still-closer look at community service and patient care.

Some members of the community, and even practicing physicians, might be surprised by the scope of recent changes.

"The center is sometimes perceived as an "ivy tower" kind of place, where everyone simply wants to do research and patients are only needed for that research and for revenues," says Peter G. Tuteur, M.D., associate professor of medicine. In fact, though, this medical center bears little resemblance to other academic centers in the country which hold themselves aloof from their communities. "This medical center derives great strength from the community and returns it in the form of a significant contribution: a quality of medical care not surpassed anywhere in the country," says Lawrence I. Kahn, M.D., co-founder and former medical director of the Medical Care Group.

Anyway, having some "ivy tower" characteristics is actually an asset, says David A. Gee, president of Jewish Hospital. While some medical schools have slighted scientific and research activities in favor of money-making, clinical ones, he says, "the Washington University School of Medicine has maintained its strength as a scientific institution by having given emphasis to the research functions that are its important attributes." Yet in emphasizing its major educational and research missions, he adds, the school must also appreciate the economic pressures that are facing its affiliated hospitals.

The institutions comprising the medical center are interdependent, friendly, yet sometimes adversarial partners. In the face of new pressures and changes, it is more necessary than ever for them to work together. Says Robert Frank, president of Barnes Hospital: "All of the entities in the medical center recognize how important it is to cooperate, rather than compete."

During a speech given this spring at a Rush University symposium, Virginia Weldon, M.D., deputy vice chancellor for medical affairs at W.U., cited the following statistics compiled by the American Hospital Association. In 1984, U.S. hospitals experienced their largest decline in the number of beds and occupancy rates in two decades. Just from 1983 to 1984, occupancy fell from 72 percent to 66 percent, the lowest rate since the AHA began surveying hospitals in 1963.

Behind these figures are several factors, says Gee: reduced admission, reduced numbers of ancillary services per admission, shorter length of stay, the nearly total disappearance of the short-stay patient, and the shift in focus to ambulatory care. At Jewish Hospital alone, "we have closed 100 beds in the past 18 months and reduced our in-patient work force proportionately," says Gee. While
The new Barnes Hospital emergency room has a central nurses' station which provides staff with an immediate view of 18 treatment rooms: five each medical and surgical, three for major trauma, as well as specialized rooms for orthopedics, otolaryngology, ophthalmology, obstetrics/gynecology, and psychiatry.

They have succeeded in making substantial budget cuts, even achieving their best year ever financially, cost cutting has become the norm. "Those programs which would at one time have been eagerly embraced are now carefully scrutinized and the ones which have academic significance, but don't hold their own financially, simply don't ever get off the launchpad," he says.

This new scrutiny of hospital finances was stimulated by law, as part of the Medicare patients' prospective payment plan adopted by Congress in the Social Security Amendment of 1983. "Until then, efficiency had nothing to do with the bottom line," says Tuteur. "It was basically a cost-charge reimbursement system: There was no sense instituting a cost-accounting system — it just cost money and it didn't do anything." The new system establishes the rate of reimbursement in advance of the period over which the rate will apply. Payment is based on Diagnosis-Related Groups (DRGs), a system which assigns a patient to a particular classification depending upon diagnosis, surgical procedure, complications and age.

The effect of prospective pricing on Jewish Hospital finances has so far been favorable. "It has been one of those rare cases where you actually have a 'win-win' situation on both sides of the equation," says Gee. The payors have benefited "and it has enhanced bottom line performance simply because our expenses have dropped faster than our revenue." Over the four-year, phase-in period of the program, changes in the payment ratio are likely to cancel the advantage, however.

"We have reaped the early benefits of the system and we think they will erode fairly quickly."

With the new emphasis on efficiency has come introduction of cost-accounting methods. "There used to be a cost-shifting concept that said, 'We cannot charge so many hundreds of dollars more than appropriate for this advanced procedure, but we can charge more for a chest X-ray and pay for the advanced procedures that way,'" says Tuteur. "Now, the hospitals are critically evaluating costs and charges on a unit-by-unit basis."

Patients will also make health-care decisions on the basis of cost. "If a CT scan costs $400, and the person who needs it will have to pay 20 percent, he is likely to ask his doctor: 'That's going to cost me $80, is this really worth it?' And the
doctor might reply: "Well, maybe we can delay a week and see whether you really need it."

Consumers have also begun looking at various competitive institutions for their health care. PPOs and HMOs are gaining in strength; in 12 states, the investor-owned hospitals have a market share exceeding 20 percent. "In 15 years," says Weldon, "some predict that fewer than 20 corporations will provide most health care, including health insurance, to six Americans in 10. . . . And our medical schools and teaching hospitals will be operating in a price-competitive environment that will not tolerate the addition of the costs of medical education to the delivery of health services."

In St. Louis, the competition is already intense. With a daily patient census averaging 875 to 925, Barnes still enjoys the highest market share in the area, says William Doty, Barnes director of marketing. Barnes, Jewish and St. John's Mercy Medical Center continue to be the dominant providers in the community, says Gee, though other hospitals — especially Deaconess, Missouri Baptist and St. Anthony's — have moved in aggressively to increase their market share.

Long-term, the hospitals' financial situation will hinge on several factors, says Gee. "By 1986, a lot will depend on what happens with the recently announced freeze on Medicare prices, the inclusion of capital expense in the prospective price rate, and the medical education formula. If those are changed moderately, then I think we will come out on a reasonably safe basis: If they are cut in some Draconian fashion, then I think that we will have financial difficulties," he says, adding: "We say our prayers every day."

David Gee, president of Jewish Hospital

THE OUTCOME

The hospitals of the medical center have been revamping facilities to accommodate technical advances that make possible outpatient procedures such as intraocular lens implants. Jewish Hospital has opened an outpatient surgery unit, quadrupling the hospital's outpatient capacity, which will operate for about two years. Then the Ambulatory Care Build-

ing (an adjacent nine-level structure now being built) will be completed. And in January, Barnes opened its new, second-floor outpatient area. "It is state-of-the-art," says Peg Tichacek, Barnes director of planning. "It creates a designated area for patients to enter the outpatient area, undergo a surgical procedure, and return home on the same day. The care is efficient and very accommodating for outpatients."

New facilities have also been planned with patient care in mind. The brand new, $9.9 million Barnes emergency department more than triples the size of the old facility. It includes such features as sophisticated major trauma rooms where seriously ill patients can have X-rays taken without moving from the stretcher, an automated system to transfer specimens to the lab, and non-public elevators to take patients directly to the operating rooms.

This up-to-date department represents a new commitment for the hospital, admits William Monafo, M.D., emergency department director. Just 25 years ago, "Patients with acute trauma were discouraged from coming here — most went to the city and county hospitals. There was a small facility here for acutely ill patients, but it was a very low-key operation."

Through the years, though, the patient mix has changed and the demand for trauma care has increased, in part due to the closing of Homer G. Phillips Hospital and the decline of City Hospital. And the emergency facilities, once treated as the "poor stepchild" of the hospital, are attracting fresh attention. "Now we have moved into a nice, elegant facility equal to taking care of these serious
problems," he says.

The Health, Education and Screening Center was installed last year in a highly visible location near the Barnes Hospital entrance. Two breast cancer screening programs filled so quickly that a third session had to be added; a testicular screening program is planned.

Both Barnes and Jewish are beginning to call on area employers about new wellness programs, currently offered only to hospital employees. And Jewish has already been holding successful Nicotine Withdrawal Clinics for Smoking Cessation, open to the public.

The Apnea Program at Children’s Hospital has been helping families of children at risk for Sudden Infant Death Syndrome for three years. “Our program is the direct result of serving the needs of the community and practicing physicians,” says Georgia SHEFFIT, patient care and research coordinator for the program. The program provides information and training to parents who need to use equipment to monitor their baby’s breathing. Like other hospital programs, this one represents a shift in emphasis toward economy and more effective patient care.

Similarly, the Barnes Home Health Department aims at saving money and helping patients who might otherwise lack the follow-up care they need. The program, began last September, operates in association with the Irene Walter Johnson Institute of Rehabilitation in offering a range of nursing and supplementary services to oncology patients, diabetics and burn patients, among others. Doctors who use Home Health may also participate in the hospital’s new program which encourages patients undergoing tests or treatment, but needing little in the way of nursing care, to stay in Queen’s Tower rather than occupy a hospital bed. Home health care has been pursued by Jewish Hospital for 35 years, points out Gee: “We’ve been in the home care business a long time,” he says with satisfaction.

As the very existence of the Medical Care Group demonstrates, the medical center has long been willing to respond to change, says Kahn. In 1969, when MCG came into being, the center was one of only five academic medical centers in the country willing to be involved in this new approach to health care. “Amid the social unrest of the late 1960s, interest surged in the humanitarian aspects of medicine among U.S. medical centers. The questions being asked were: What is this center doing for the community? Is it just feathering its own nest? And many of the faculty here began to ask those questions themselves.”

Soon Gerald Perkoff, M.D., joined by Kahn, tried a two-pronged experiment: To test whether new methods of health care delivery popular on the West Coast worked here; and whether it was possible to determine ways to contain health care costs within such a system of prepaid group practice. The experiment proved successful. Now, under the sponsorship of Metropolitan Life, MCG will be used as a model for the nationwide marketing and development of prepaid group practice.

“We were the pioneers in the community,” says Kahn. “It was not the business community or even patient demand that created MCG — we had a hard time convincing them. Those who examined a prepaid group practice, generated it, fostered it, and made it work were people at the Washington University Medical Center. That’s been, and continues to be, an enormous contribution to the St. Louis community.”

Prodded by competition and economics, the medical center is branching out in new directions. At Barnes, advertising is one. “Five years ago, you didn’t find hospitals, physicians or dentists doing any kind of promotion other than normal public relations announcements,” says Barnes marketing director Doty.

Children’s Hospital has just hired a marketing director, as has Jewish Hospital. At Jewish, though, “we’re concentrating primarily on our voluntary medical staff, since 90 percent of all admissions are derived from part-time faculty,” says Gee. The hospital, for example, recently purchased two office buildings on Dallas Road which have 60 percent occupancy by Jewish Hospital staff members, including the 10 most active physician-admitters. Jewish also has set up some satellite operations in St. Louis County, especially the Home Care Program and a physical therapy satellite. The hospital is exploring the possibility of outpatient services in the County to more closely reach some of its clientele.

Long-term strategies at Barnes include “fleshing out our marketing mix, involving promotion, pricing and distribution strategy,” Doty says. One step was the purchase of Sutter Clinic (now Barnes/Sutter Healthcare) last year, to provide industrial, medical and primary emergency services for downtown employees. Another was the recent formation, with nine other Missouri hospitals, of a corporation that gives them a competitive edge over for-profit hospital chains. The corporation, called VHA Mid-America, plans to reduce costs through such joint efforts as group purchasing.

Along with the changes, doctors emphasize, the medical center continues to exhibit its traditional strengths — which also benefit the community. The academic clinician, for example, is “a liaison between the researcher and the primary physician, taking the material which comes from the lab and applying it to clinical practice,” says Alan P. Lyss, M.D., assistant professor of medicine and director of clinical oncology at Jewish Hospital.

And the center continues to act as a referral center, taking care of specialized cases. “You’ve always seen some public perception that the university is an ivy-covered tower and activities here are removed from the mainstream of medical practice. Yet, when people have unusual diseases or are at a crossroads in their medical care, they have turned to the university for innovation,” says Lyss.

But the medical center is also changing. “And not only are we changing, we are also leading,” concludes Tuteur. “We haven’t been a leader in letting the community know about our innovations, but we have been a leader in developing innovative programs.”

Candace O’Connor is a St. Louis-area freelance writer and frequent contributor to Outlook.
STUDENT STAGE

THE HOT DOCS

BY GAIL DIBERNARDO

The Hot Docs have been playing Glenn Miller and Tommy Dorsey tunes at medical school class shows and alumni reunions for the past six years. In that time, they've become a medical school tradition. You can see them in their white lab coats and shirts, black pants, and red cummerbunds and bow ties, playing their hearts out at noontime concerts in Barnes Hospital cafeteria, the graduation party thrown by the Department of Pharmacology, or at the Gargoyle on the Hilltop campus. And anywhere they play, audiences love them.

"They're fabulous," says Chris Owens, director of medical alumni programs. "They're crisp, talented, enthusiastic, lively and professional." Charles Norland, M.D. '59, former president of the medical alumni association and a musician himself, is very enthusiastic about the Hot Docs: "They are really good, I kid you not. Most have played professionally in college. They have a good sound."

If you tell Ellis Neufeld, M.D. '85, director and conductor of the band for its first four years, what people are saying about the Hot Docs, he's pleased but quickly puts it in perspective: "We try to put on a great show. But you have to come wanting to see a group of medical students and not expect Woody Hermann's band."

Joe Awad, M.D. '85, director for the past two years, says he tries to draw on the band's strengths and limit it to what it does well. They play the traditional big band sounds the best — the songs you know even if you're too young to remember the '30s and '40s — "In the Mood," "String of Pearls," "Sing, Sing, Sing." Says Awad: "We stay away from rock music, more modern big band jazz or progressive jazz.
Neufeld remembers their first class show performance: "The class that entered in '79 started a band for our class show. Our first rehearsal was terrible. Our drummer played jazz without being able to read music. Several of the musicians hadn't played since high school. It was very depressing. But there was a lot of enthusiasm. People practiced and got it together for that first show."

Money was very short at the beginning, and expenses were high. "When I was a second-year student," says Neufeld, "it cost $20 to buy sheet music for one jazz band tune. If you play 20 to 30 tunes a dance, that's $600 worth of music." Early on, the Medical Alumni Association provided them with sheet music, bandstands, and their trademark cummerbunds and bow ties. Neufeld came up with their name, and the band was on its way.

The Hot Docs grew and developed largely because of the work of its directors. The director/conductor gets gigs, arranges rehearsals, and lobbies for money and equipment. Neufeld persuaded the Medical Alumni Association to fund the band's sheet music, which the association now supports to the tune of $300 per year. Their repertoire now includes some modern big band sounds from Count Basie and Woody Herman, and pop tunes - "Where Is the Love," "You Light Up My Life." Awad secured the band's sound system and an electric piano.

Today, the Hot Docs are a Glenn Miller-sized band. They have five each of players skilled at trumpet, trombone and saxophone, and a drummer, piano, base and acoustic guitar player. "Our big problem now is that the medical school hasn't taken in a trombone player," laments Neufeld. Trombonist-conductor Awad is leaving the band to start residency. "We've been pretty lucky getting players from within the medical school community," recounts Neufeld. "But the problem we have every year is that first-year students don't admit it if they're musicians. They're nervous about being able to get their work done if they commit themselves to a band. Then, at class show time, they show up with their instruments."

Some of these new students eventually end up in the band, even though their time is limited for rehearsals. The Hot Docs make no money — any concert performed in the medical center is done gratis. They performed at a charity concert for a local children's cause this year, something that Awad says he would like to see them do on a regular basis, "to show that medical students are interested in what's going on outside the medical center."

"We do all this," muses Neufeld, "because it keeps us from going crazy. And it's nice to do something you don't get graded for. It's nice to hear the compliments." Awad says that he's been able to carry out the time-consuming duties of the director without sacrificing his grades: "That's because this music is a part of my life. All the Hot Docs are used to giving up their time for rehearsals because we see it as something important."

Owens notes a "real camaraderie" that transcends individual band members. At this spring's alumni dance, Norland sat in and played drums, and other graduates were asked to sit in. It is this camaraderie and good will — a feeling of community — that has made the Hot Docs a tradition, perhaps the only student tradition at the medical school.

Rumor has it that the tradition goes back well beyond the six-year tenure of the Hot Docs. Awad says he found old music tucked away from 25 years ago that suggests there may have been a band back then. Over the years, medical students informally played at alumni dances, but there was no formal band until the Hot Docs' first performance six years ago.

"Cornell and Stanford and Boston Children's - they all have bands. I hope we're a tradition here," says Neufeld. "I think we've convinced the administration that we're firmly established — we're in the medical school catalog this year — and we will keep going."

Gail DiBernardo is a St. Louis-area freelance writer.
Window to the Brain

The brain. In humans, three pounds of pink-gray, convoluted jelly.
Over one-hundred billion nerve cells, trillions of interconnections. Capable of balancing a checkbook, falling in love, memorizing a concerto. Capable of contemplating itself and its abilities to think, feel emotion, and remember.

Scientists explore the working brain with electrodes, which map nerve cells' electrical activity as an animal moves a paw or has a seizure. But though such maps are valuable, they are limited because a few electrodes cannot spy on billions of brain cells.

Some neuroscientists are making maps of the whole working brain, rather than of preselected regions. They use radioactive tracers, which enter every cell and light up those that are especially active during a given activity. This approach is providing insights into diseases such as epilepsy, stroke and dementia. To analyze the resulting images, neuroscientists enlist the help of computers and computer scientists.

Neurologists and computer scientists at the School of Medicine interact in the Laboratory of Neuro-Imaging (LONI), located in McMillan 315. LONI is the brainchild of Robert C. Collins, M.D., professor of neurology, and director Arthur W. Toga, Ph.D., research assistant professor of neurology. After many years of manually analyzing brain images, "which was time-consuming and inaccurate," says Toga, "we thought that if we could apply NASA technology to neuro-imaging, it would be the greatest thing since sliced bread. This revolutionizes the study of functional brain activity."

NASA uses computers to digitize and then enhance satellite pictures of the earth's surface, making the images clearer and amenable to quantitative analysis. Toga wanted to do the same for brain images and to act as a resource to other researchers studying brain function. With a $213,000 shared instrumentation grant from the Division of Research Resources at NIH and additional money from the School of Medicine, the Department of Neurology and Neurological Surgery, and the McDonnell Center for the Study of Higher Brain Function, the laboratory opened on January 25, 1984. Less than two years later, LONI has 50 users.

Understanding Epilepsy

Collins uses LONI to study epilepsy, a disease that affects over four million Americans. During an epileptic seizure,
brain cells become overexcited, generating an electrical storm that may overpower large regions of the brain and produce the convulsions of a grand mal seizure. But when just a few regions of the brain malfunction, a partial seizure results. In adults, this is commonly in the limbic region, a part of the brain that governs emotions and other "primitive" functions. Limbic system seizures begin in part of the forebrain. They alter consciousness, presenting the sufferer with strange sensations or with visions of childhood scenes.

One Barnes Hospital patient, a woman in her 40s, describes the limbic system seizures that have plagued her since she was six years old: "I get a tingly feeling with pressure in my chest or vagina," she says. "It lasts from 30 seconds to over a minute. Sometimes that feeling goes away, but sometimes it brings on an attack, when I hear myself making sounds. They're laughing, giggling sorts of noises, but they're low pitched, as when a boy's voice changes at puberty. It sounds like I'm hearing somebody else, not me. And I can't control it — it controls me. "Sometimes I just black out and fall like a ton of bricks. I'm told that my legs make pedaling motions and my eyes are glazed. Afterwards, I don't know where I am or what to do. I can't complete a thought, I can't write legibly, I can't do a simple thing like make a bed."

"Epilepsy is an experiment of nature," Collins says. "It lights up the brain in a very dramatic way and allows us to think about which parts are responsible for the symptoms."

Collins studies limbic system seizures in animals with quantitative autoradiography (QAR), a technique developed by Louis Sokoloff, M.D., at NIMH. The radioactive tracer is a glucose-like molecule that remains partly metabolized in brain cells, revealing rates of metabolic — and therefore electrical — activity. QAR's ad-
vantage over the analogous technique of positron emission tomography (PET) is its 100,000-fold greater resolution. But because QAR requires the brain to be sliced before imaging, it cannot be used without sacrificing the experimental animal.

The brain slices Collins studies come from monkeys that have undergone limbic system seizures while taking up radioactive sugar. Collins stains each section with histochemicals and makes both an anatomically perfect, photographic image and an autoradiogram. The latter, a picture of sugar metabolism, develops when a section is placed in contact with film for a couple of weeks. Radiation from the sugar's carbon atoms darkens areas of film on which they impinge, producing an image in shades of gray.

By comparing the anatomical and functional images of each section and converting optical density measurements from the autoradiograms into rates of sugar metabolism, Collins determines exactly which areas of the brain are hyperactive during a limbic system seizure. He has detected increased activity not only in the area where the seizure begins, but also in parts of the limbic system remote from the seizure focus.

"There's a whole series of structures involved," says Collins, "and they are all connected to the area of discharge. What the metabolic studies have allowed us to do is see the full extent of those pathways. Now we have to try to develop the idea that all these structures are linked together. It's not appropriate to think that the abnormal behavior caused by seizures is the expression of one part of the limbic system or another, but more of a complex functional system that has been taken over by an epileptic discharge. I think that idea is one that LONI is going to be able to support. . . . That brain function is the expression of activity throughout interconnected systems rather than of one area that's dominant over another. But if we are going to understand brain function in terms of interacting systems, we have to have a way of seeing all those systems. Our method allows us to sample the entire brain for functional activity."

Collins is continuing his study of epilepsy by looking at generalized seizures "where no one has any idea which pathways are involved." In addition, he is mapping cerebral metabolism in animals with symptoms of Parkinson's disease. Besides pinpointing brain mitochondria — a cell's "batteries" — Collins measures metabolic rates with a fatty acid that enters the brain much more rapidly than sugar, revealing changes in metabolism during transient activities.

With the aid of LONI, Collins hopes eventually to study very subtle changes in the brain. "One day," he says, "there will be a functional neuroanatomy of fear or pleasure or anticipation."

NEW HOPE FOR STROKE VICTIMS?

Another project nourished by LONI is a study of cerebral metabolism following the creation of brain lesions. Ruthmary K. Deuel, M.D., associate professor of pediatrics and neurology, is interested in the control of thinking by the cerebral cortex. For a model, she analyzes events in the dorso-lateral parietal lobe — the part of the brain that lies above and behind each ear — when sequential voluntary movements are performed. Adults with strokes often exhibit apraxia — an inability to perform certain movements despite the absence of paralysis — or display difficulty with sequential movements. For ex-
Robert C. Collins, M.D., one of the founders of the Laboratory of Neuro-Imaging, uses its facilities to study brain events during epileptic seizures. Collins has discovered functional systems activated during an episode of abnormal electrical activity in the brain. This finding means that complex events in the brain cannot be defined simply by studying individual regions in that organ.

ample, they may not be able to tie a shoe because they cannot put together the sequence of movements required.

Monkeys with new parietal lobe lesions exhibit apraxia and neglect the side of the body opposite the lesion. But by the time two months have elapsed, the abnormal behaviors have resolved, even though the lesion is still present. What changes in cerebral activity, Deuel wondered, occur during the recovery period?

After infusing monkeys with radioactive sugar, Deuel prepared brain slices of monkeys with new lesions and monkeys that had recovered normal behavior. Using LONI, she scanned the brain slices for abnormal rates of sugar metabolism. What she found was unexpected and previously undemonstrated.

The monkeys with new lesions had very low rates of sugar metabolism not only in one parietal lobe, where nerve cells were missing, but also in two quite distant sites where there was no structural damage. But nerve cells in those sites of the recovered monkeys' brains used sugar at normal rates.

"What we found," she says, "is that an animal with neglect and apraxia is one that has decreases in glucose utilization deep within the brain. These appear to be related to a lack of electrical activity in the pathways that used to come from the parietal lobe. This seems to outline a system of structures within the brain that is active in selective attention and motor praxis. This reinforces Dr. Collins' finding of functional systems within the brain.

"The experiment also told us something about recovery. Recovery of some of the structures within the functional system allows recovery of function of the entire system. What you need in order to get some functions back is for distant structures to regain their normal rates of glucose utilization."

Deuel anticipates that her finding may one day help stroke victims who, like her monkeys, have brain lesions. "Stroke is a terrible problem," she says. "Despite excellent bodily health and normal strength, some stroke victims cannot function normally. If they have an attention deficit, they cannot do activities we associate with a normal life — driving a car, speaking intelligibly, or taking a walk around the neighborhood. But if we could determine the factors that create recovery of the brain's metabolic function, we might have a chance of promoting the recovery of higher brain function in people with strokes."

The list of projects grows. Joseph L. Price, Ph.D., professor of anatomy and neurobiology, surveys brain slices in search of the enzyme that makes acetylcholine, a neurotransmitter whose loss may be related to Alzheimer's disease. Pharmacologist Emily M. Santori, Ph.D., research instructor in neurology, assays receptors for neurotransmitters in the brains of epileptic rats. She hopes to discover if changes in a neurotransmitter's affinity for its receptor can explain why one epileptic seizure promotes another.

From his quarters on two floors of the McMillan Building, Robert A. Moses, M.D., professor of ophthalmology, sends pictures of the retina to investigate blood flow in this organ. Other users, bearing images, trek in from Iowa, New York and Houston, eager to develop new techniques or find new applications for tried and true ones.

Commenting on the quantitative autoradiography performed by LONI users, NIH's Sokoloff (the technique's developer) says: "It's beautiful work. Many people at other institutions are using the methods blindly, without understanding them or applying them properly. So it's a relief to see somebody doing things right."

Linda Sage, Ph.D., is a freelance writer and frequent contributor to Outlook.

Note: Arthur Toga was among the 39 Americans held hostage in Beirut in June. This story was written from interviews held before his trip.
"Many research activities generate visual data, presenting the researcher with the problem of quantifying it," says Arthur Toga, Ph.D., director of the Laboratory of Neuro-Imaging (LONI). "So we take pictures and transform them into computer language. Then we have a set of numbers from which we can make statistical or mathematical conclusions."

The transformation of an image such as an autoradiogram begins in a digitizer, an array of photodiodes that moves up and down across the image. The machine measures the amount of light coming through the film at over four million spots. This converts the continuously varying shades of gray to numerical values for optical density falling between 0 (black) and 255 (white). The numbers can be translated into metabolic rates. They can also be manipulated into computer-generated images with much greater contrast than the original.

One option for enhancement is to expand an image's grayscale, giving it a wider range of contrasting tones. Another technique is to assign false color to the image. This makes details stand out to the human eye, which can distinguish between two colors more easily than between different shades of gray. A LONI user can place a digitized image in a computer and assign 16 different colors to the optical density scale. For example, an autoradiogram could be colored to distinguish between areas with different metabolic rates.

Since LONI users often wish to compare images, Toga has addressed the problem of alignment. His simple but elegant solution is to introduce two columns of radioactive paste vertically into the embedding material so that two discs of paste appear on each section when the brain is sliced horizontally. Because the discs are both radioactive and stainable, they show up on both autoradiograms and photographs of stained sections. Therefore a user can align the two types of images in a computer by matching these reference points. Toga now wants to align images of slices from different brains so that users can compare the brains of control and experimental animals and contrast different brain functions such as glucose metabolism and blood flow.

LONI's algorithms are designed for neurologists with no knowledge of computer science. With the aid of a menu and on-line help, scientists can align and enhance grayscale or colored images without endangering their original data. LONI software is also available to scientists at other universities.

As well as enhancing and analyzing two-dimensional images, Toga (a neuroscientist and computer scientist) has constructed three-dimensional images of the brain showing the spatial distribution of glucose metabolism in relation to anatomy. "In order to generate visual data," he says, "we have to slice up the brain. So we wanted to put it back together and still retain the quantitative information. What we are trying to do is retain the coordinate system that is inherent in real life and keep track of it as the brain is sectioned up into slices, as those slices generate visual data, and as that visual data is digitized. Then we try to put all those slices back together again."

To make a three-dimensional functional model of an epileptic rat brain, Toga instructed his system for image analysis to outline slices of the brain and then to stack the outlines like a pile of hoops, aligning the images as described above. "Because these images are displayed on a two-dimensional screen," says Toga, "the user has to play 'tricks' to get a three-dimensional effect — the image can be rotated around any axis." Finally, by inserting metabolic data from autoradiograms, Toga derived a model that could be sliced at any angle and plane to reveal an image of sugar metabolism in the exposed wedge. "It's like slicing through a hard-boiled egg and seeing the yolk," he says.

Before such models become routinely available, Toga must speed up the lengthy computations. "It's a very difficult problem," he says, "because you have an incredible volume of data. You may slice the brain into 100 slices, and each slice may have a million bytes of information."
Pamela Buschard, a 32-year-old administrator at McDonnell Douglas, absentmindedly scratched her chest as she watched television. By chance, her fingers alighted on a mass in her right breast, a lump as hard and round as a pebble.

In July 1984, a surgeon removed the lump and discovered breast cancer. But because the tumor was small (1.5 cm in diameter) and cancer cells had not spread to other parts of the body, surgeons were able to save Buschard's breast and to promise her an excellent chance of survival. They removed lymph nodes from her right armpit and administered radiation therapy. Today she is apparently free of cancer and still has two intact breasts.

Geri Rothman, 40-year-old wife of lawyer/politician Ken Rothman, was less fortunate. In December 1981, she decided to do "one of my semi-annual breast exams. As I lay there, my fingers felt my world come to a screeching halt. Surely this small, hard rock couldn't be a lump in my breast."

The "rock" was a malignancy in her right breast. Moreover, a breast X-ray showed small white dots scattered over the film, a sign that cancer had spread. The breast would have to be removed. Eighteen months after a modified radical mastectomy, the cancer recurred and Rothman needed radiation treatment and chemotherapy. Her hair fell out, and she was unable to feel her patient's appearance of her reconstructed breast, Rothman might have been spared chemotherapy and extensive surgery if her cancer had been detected earlier.

Buschard and Rothman are typical of the 119,000 American women who will discover that they have breast cancer this year. Over 38,000 will die from the disease. But the number of deaths — and the number of surgically removed breasts — could be reduced. Breast cancer detection need not be accidental, as in Buschard's case, or late, as in Rothman's case. Tumors can be detected long before they can be felt or even have time to spread, giving women a 93 percent chance of survival for at least 20 years.

But who should be checked for breast cancer? Under what conditions? And which diagnostic procedures are best? Using breast screening data, a team of researchers headed by John K. Gohagan, Ph.D., professor of preventive medicine, developed mathematical models that could help physicians answer these questions. Like other researchers, the team concluded that mammography — X-ray examination of the breasts — is the most accurate single method for early detection of breast cancer. But unlike other researchers, they used mathematical techniques to decide when mammography is appropriate. Their models reveal that a woman's age and the competence of her radiologist should be the most important factors affecting a decision to perform a mammogram. And that benefits clearly outweigh all costs by the time a woman reaches her late 40s.

The models consider not only accuracy, but also financial and social costs of the tests, future costs of undetected cancers, and the possibility that the radiation dose from mammography could itself induce a small number of breast cancers.

The Gohagan team's findings increase current doubts about self-examination as a premier detection method. The results also lead Gohagan to suggest that women ask important questions about radiation level, frequency of equipment checks, and number of mammograms their clinic performs.

At present, physicians have no firm guidelines because there is disagreement over the scheduling of mammography. The American Cancer Society recommends that all symptom-free women receive periodic mammograms beginning between ages 35 and 40, while the National Cancer Institute recommends mammography only for women at high risk — over 50 or with a family history of breast cancer.

Reaching for a floppy disk, Gohagan, who is also a professor of engineering, says, "This allows you to sit in front of an IBM PC and enter data characterizing a woman's risk profile. For example, you can say that a woman is 42, has two children, and was 24 when the first was born, nursed them for a total of 12 months, and has no symptoms of breast cancer. The computer then goes through the calculations and recommends that a woman have or not have a mammogram."

Copies of the disk should be available to medical educators later this year through the division of health care research in preventive medicine. The disks will be available to medical schools, where future physicians learn to balance the pros and cons of breast cancer tests.

Richard D. Costlow, Ph.D., head of the National Cancer Institute's Cancer Detection Branch, directed a national, five-year breast cancer detection project sponsored by NCI and the American Cancer Society. He says the Washington University mathematical models, drawn from part of that project's data, "provide another piece of information in a large void. They don't answer all the questions, but they do help determine how frequently we suggest a screening exam, the age groups that should have it, and the sequence of the examinations."

The 10,000 women who generated data used for the models were seen at the Cancer Research Center in Columbia, Missouri, one of 27 NCI-ACS breast screening projects. Between 1974 and 1979, the Missouri center, directed by Ned D. Rodes, M.D., screened women annually, using mammography, clinical palpation by a nurse-technician, and thermography. The center also taught women, ages 35 to 74, how to examine their breasts at home.

The specialists who interpreted and recorded the results worked independently so that they could not influence each other. Then they pooled informa-
tion to decide whether a woman should have a biopsy to diagnose detected abnormalities.

**Mammography Most Accurate Method**

The Washington University group began to analyze the screening data in 1979 in collaboration with the Missouri screening project. The work was sanctioned by the National Cancer Institute and funded by the National Center for Health Services Research, U.S. Public Health Service.

The researchers — including Edward L. Spitznagel, Ph.D., professor of mathematics, William P. Darby, Ph.D., associate professor of engineering, and others — noted that 152 breast cancers had been detected during and between 50,000 visits to the five-year project in Missouri. When they assessed the individual screening methods commonly used on symptom-free women, mammography stood out as the most accurate. It correctly identified 58 percent of all the breast cancers, and misclassified only 1 percent of noncancerous breasts. Clinical palpation alone, however, correctly identified about one-fourth; thermography demonstrated just over a third. Thermography produced the most false alarms because infections as well as tumors generate abnormal heat patterns. This made thermography unsuitable for screening, and all 27 screening centers discontinued its use in 1976.

The screening methods also differed in ability to detect very small tumors, whose diagnosis and treatment offer the greatest survival rates. Mammograms revealed cancers as small as pinheads, but only cancers at least one centimeter (about 0.4 inch) in diameter could be found by clinical palpation.

"By the time a mass reaches a centimeter in diameter, it has about a billion cells," says cancer specialist Rodes, now at the Audrain Medical Center in Mexico, MO. "And masses may be as big as golf balls before they are detected by palpation in some obese breasts. Moreover, 50 percent of all masses have metastasized by the time they become palpable."

The data did not lead to any firm conclusions about the value of breast self-examination because not many women were willing to practice it methodically. Further, the 16 cancers detected outside
BEYOND MAMMOGRAMS

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Currently, mammography is the best technique for early detection of breast cancer, and it is performed at two locations in the medical center. Mallinckrodt Institute of Radiology conducts breast X-rays of over 5,000 women each year. The Department of Radiology at Jewish Hospital will test about 4,000 women in the coming 12 months. Both conform to standards for radiation exposure suggested by John K. Gohagan, Ph.D., professor of preventive medicine, radiology, and engineering and applied sciences at Washington University. The examination, performed in two or three exposures per breast with X-ray film, imparts about a half rad for three views. But Gohagan is investigating the potential of a followup procedure for women whose mammograms hint at a potential problem.

Magnetic resonance imaging (MRI) does not involve irradiation with X-rays. Images like the one on page 18 are obtained through the use of a powerful magnet and radio waves.

Gohagan is principal investigator of a two-year study funded by the National Institutes of Health that will compare the usefulness of MRI with mammography and physical examination. MRI may be especially useful in cases in which mammography results are indefinite.

MRI offers a unique view of breast structure, one not provided by mammography or other procedures. "In the future," says Gohagan, "this may be helpful to clinicians in identifying the extent of lesions and cysts in fibrocystic breasts, and in discriminating between some benign and malignant tumors without the need for biopsy." He points out that this investigation of MRI is an extension of studies that began nearly 10 years ago, comparing the effectiveness of mammography, thermography, and physical examinations.

Within the next year, Gohagan plans to conduct MRI evaluations on some 200 women. Women who have routine mammograms at Mallinckrodt Institute of Radiology will be invited to receive an MRI free of charge. Those who are interested in participating in the MRI study and would like to schedule a mammogram may call 362-7110.

The center represented both cancers found by the women themselves and their physicians. But even if all 16 had been found at home, the detection rate would have been low enough compared to the number of biopsies done to cast doubt on the effectiveness of breast self-examination. "Furthermore," says Gohagan, "most of these would have been found in the next screening examination."

Beyond individual methods, the team analyzed the effectiveness of various combinations. They discovered that clinical palpation, though not very effective by itself in detecting small cancers, greatly increased detection rates when combined with mammography. The two methods used together correctly identified 82 percent of all the cancers, while misclassifying only 2 percent.

Since mammography was obviously superior to the other methods, Gohagan's group addressed the problem of when should a symptom-free woman have a mammogram? He wanted to balance the probable benefits against the probable costs. "A woman with no symptoms of breast cancer has to periodically decide whether to have a mammogram or other tests," says Gohagan. "And a false negative or false positive test is always possible. But the consequences associated with missing a cancer are certainly greater than the consequences of doing a biopsy when a woman only has fibrocystic disease [benign, fibrous tumors]. So when we make decisions, we have to try to balance the possible negative consequences and potential benefits associated with them."

Age and Accuracy

Gohagan found that the two most important factors affecting the decision to perform a mammogram are a woman's age and the accuracy rates at her mammographic center. Age is a much more important risk factor — and therefore a more important reason for having a mammogram — than other variables, such as family history of cancer (other than breast cancer), the age at which a woman had her first child, the length of time she nursed babies, or the age of menopause. Consequently, the researchers concluded that the benefits of annual mammography outweigh the risks by the time a woman reaches her late 40s.

Unfortunately, using their data, the researchers could not directly assess the risks associated with two important factors in developing breast cancer — previous repeated X-rays and family history of the disease. They had to rely on the projections of other researchers. But a recent study by the federal Centers for Disease Control found that women with an affected mother or sister had a relative risk of 2.3, whereas those whose mother and sister both had breast cancer had a relative risk of 14.

Regarding radiation risk, the Washington University team concluded that benefits of mammography outweigh hazards in centers where accuracy rates are high and false alarms are infrequent, but vice versa at centers with low detection rates. "The risk/benefit ratio of radiation hazard depends on the competence of radiologists who classify mammograms. An inaccurately read mammogram still doses a woman with radiation," Gohagan points out. "If a center's accuracy rates are substantially below ours, mammography probably shouldn't be used."

Gohagan thinks that women would benefit if the national cancer organizations could monitor and reveal detection rates. "I'd like to see organizations like the National Cancer Institute and the American Cancer Society develop a screening policy to encourage accuracy monitoring and enhancement," he says. "Such a policy might indicate key features associated with accuracy to the benefit of women and their physicians."

The most recent publication of Gohagan et al. on breast cancer detection is "ROC Analysis of Mammography and Palpation for Breast Screening," in the journal Investigative Radiology, November-December 1984, Vol. 19, No. 6.

ANTIBODIES
immunoglobulin
Ernest St. John Simms must have been special. When he died two years ago this fall at the age of 66, he was an associate professor — with tenure — in the Washington University Department of Microbiology and Immunology. He played an integral part in historic scientific research, including the Nobel Prize-winning discovery of how DNA replicates.

As an academician, Ernie contributed to the education of hundreds of medical students. World-renowned scientists credit him with some of the most valuable instruction they have ever received. And many consider him one of their closest friends.

But Ernie's greatest accomplishment at the university is that he succeeded in one of the toughest institutions there is, even though he was black, and even though he didn't have a college degree.
Ernie was 19 years old when he came to Washington University to look for work. He had just returned to St. Louis after two years as an engineering student at the University of Minnesota; his father, a college professor, had died and Ernie was looking for work to support his family. He was hired to work in the Department of Surgery as a laboratory technician.

Four years later he left the medical center to go to Homer G. Phillips Hospital, thinking there were more opportunities there for blacks. He was hired as a serologist; his wife to be, a spirited young office clerk named Virginia "Ginnie" Cayson, worked across the hall from his lab.

Ginnie was determined to date the shy, handsome Ernie, and tried to get his attention by moving her desk so she could watch him work. Eventually he asked her for a date. "Ernie was not what I would call a very social person," says Ginnie, a youthful, attractive woman who still lives in the house she and Ernie bought 30 years ago. "He would be content to sit at my house and talk to my mother while I went out. I always had to be doing something and, when I would get home, Ernie would still be there waiting for me."

Ernie and Ginnie left Homer G. Phillips in 1942 to look for more lucrative work. World War II was well underway and they found jobs making bullets at the St. Louis small arms plant. It was one of the earliest opportunities Ernie had to speak out about minority rights. "We were segregated," says Ginnie. "The blacks had their own building and they had to walk almost a mile to catch the bus. The work conditions were bad and policies were overbearing."

The blacks went on strike and Ernie was their spokesman. At 5 feet 9 inches and 150 pounds, Ernie did not cut an imposing figure. But his convictions were strong and he was effective; the blacks won control of the plant, and their working conditions improved. When the strike ended, Ernie was promoted to foreman.

He stayed at the small arms plant until 1945, when he and Ginnie, who was his wife by now, left for Chicago to look for work. After working as a machinist for a while, Ernie returned to St. Louis and once again got a job in the Washington University Department of Surgery. He was to stay at the university the rest of his professional life.

Ernie had already established himself as an able technician through his previous work at the university. His first opportunity at formal experimentation came when Arthur Kornberg, M.D., head of the microbiology department, hired him as his research assistant in 1953. Kornberg's group was looking for the enzyme responsible for the synthesis of DNA, the genetic building block just analyzed by Watson and Crick. The group found the enzyme that joins small precursor molecules which, when linked in a long chain, form DNA, using an "old" (preformed) strand of DNA as a mold or template.

Six years later, after 17 papers were published on the subject (Ernie co-authored several), the foundation was laid for our present understanding of the biochemistry of DNA replication. The discovery won Kornberg and his group a Nobel Prize. "Ernie Simms was a particip-

ipant, there's no question about it," says Kornberg, who is continuing his DNA research at Stanford. "He was a fine experimentalist, very intelligent, and had the capacity to help students and fellows and participate in a very effective way."

Robert Lehman was a postdoctoral fellow when he joined the prize-winning team. He vividly remembers the experience. "We all came in early and left late," he says. "We recognized that this was a very exciting time. Ernie was very helpful in teaching me some techniques that I didn't know at all." Ernie and Lehman became close friends and maintained that relationship the rest of Ernie's life.

"Ernie was an extra-kindly man," says Lehman, who left for Stanford with Kornberg and is still there today. "He was really very sensitive and a very tactful individual who, 30 years ago, despite the fact that he was black, managed to overcome prejudice that was ambient at that time."

When Kornberg moved to Stanford, he invited Ernie to join him. But Ernie chose to stay in St. Louis and joined the division..."
of dermatology. Herman Eisen was head and asked Ernie to accompany him when he moved to the Department of Microbiology. A member of Eisen's group, Maria Michaelides, was particularly fond of Ernie. "I cared a lot about him," she says, her voice soft in reverence. "He was very good in meticulous work and imaginative with new approaches that would make something work. He was very good with his hands, and he would question everything."

"His role in many cases was that of a devil's advocate," she continues, "which was very important in a large lab. And he would never accept anything as a given. He would say, 'How do you know that?'. It was an eye-opener, and at times it was frustrating. But it was important to see that what you did was really foolproof."

In Eisen's lab, Ernie again proved himself to be a major contributor to important research, this time in the field of immunology. The Eisen group was trying to find out why a single antigen could cause the production of such a variety of antibodies, and whether a small region of a protein would be enough to stimulate multiple antibodies. In an attempt to answer this question, Ernie added a small molecule to a protein under study, then constructed a sophisticated apparatus that permitted this modified protein to be separated for further study. "Ernie constructed an extraordinary column chromatographic setup with the largest dependable automatic fraction collector then available, in order to get enough pure monosubstituted protein," says David Schlessinger, Ph.D., who was Ernie's colleague in the department. "The preparation worked, and evoked very heterogeneous antibodies. The minimal determinant for a heterogeneous response was thus shown to be quite small."

Ernie's abilities and insights paid off in a related research venture. It was known that persons with a type of cancer known as multiple myeloma produced large amounts of antibodies. Ernie helped demonstrate that these proteins were, in fact, bona fide antibody molecules of exceptional purity and uniformity. He subsequently embarked on a major effort to help determine the amino acid sequences of some of these antibodies and guided several research students in the laboratory toward the successful achievement of this goal. "An interesting result was that a type of immunoglobulin chain was discovered, and this made it possible ultimately for others to work out the organization of the genes that encode a family of proteins known as lambda, or immunoglobulin light chains," says Eisen, who is now at the Massachusetts Institute of Technology. "Ernie played an important role in that effort."

Kirk Osterland, M.D., now Thorp Professor of Medicine at McGill University, collaborated with Eisen's team during this time. He explains what it was like to work with Ernie: "He had a good grasp of the basic nuts and bolts. He understood instrumentation better than most others. If you broke it, he could fix it. He often kept colleagues out of technical difficulties. And," he adds, "he had the insight to extrapolate information from established research and apply it to new research, which is a great strength."

Osterland says Ernie's teaching abilities were just as valuable as his scientific and technical abilities. "He was most effective on a one-to-one basis. He was the person that, for years, the students turned to. He invariably had the answers and if he didn't, he would find them. Ernie was quiet, but with a spark," concludes Osterland. "It was a characteristic that is both hard to describe and to duplicate."

"Ernie enjoyed the medical students very much," says Michaelides. "He got such pleasure from them. Clearly, the minority students felt they had an open door to him. Everybody did."

When the number of black students began to increase in the late 1960s, Ernie assumed a supportive role, similar to the one he had years before at the small arms plant. "It was an easy kind of support, and not obvious black separatism," says Julian Mosley, M.D. '72, the school's second black graduate. "He was just there to support the black students so they knew they had someone."

"Ernie was afraid the black students would experience social isolation," says Robert Lee, Ph.D., assistant dean for minority student affairs and a close friend of Ernie's. "He would give them the politics of survival."

Lee's friendship with Ernie began 13 years ago when Lee came to the university. He was 28 years old and the newly appointed coordinator for minority affairs. He turned to Ernie for advice and support. Ernie would visit Lee's office, park himself in one of two chairs that sat across from Lee's desk, and talk for hours, using a plastic paper clip holder as an ashtray for his endless series of cigarettes.

"I miss Ernie tremendously," says Lee. "There are times when I wish I could call him and say 'Let me come sit in your office for a minute.' His office was a haven of rest for me."

It was a haven for many people. Over the years, students, colleagues, faculty and staff filed into Ernie's office to chat. Many remember him as he sat there, legs crossed at the knee and a cigarette between his fingers. Sometimes, while listening, he would put a finger to his mouth.
He was an exceptionally appealing and interested friend. But no one gets tenure at a major university for being a nice guy. It was his scientific acumen and achievements that qualified him.

David Schlessinger

and smile, a fan of wrinkles deepening the corners of his dark, intelligent eyes. "Ernie loved to talk," says Michaelides, who visited his office several times herself. "I would ask him one question and be in his office for half an hour. He used to read very much and he knew a lot about a lot of different things."

Ernie particularly liked to talk sports; it wasn't uncommon for him to invite several friends to his house to watch football on TV. When he came home from work each day, the first thing he did was read the sports page. He also liked to fish and frequently took his family and others to a Minnesota lake in his search for crappie. And when Ernie wasn't fishing, he was golfing. Or bowling. And his co-workers often joined him.

But his family came before anything else. His daughter, Marsha, is 32 and an attorney with a Manhattan law firm. Philip, 25, works in Washington University's Clinical Sciences Research Building. Both remember their father as a kind, even-tempered, gentle man. "Daddy and I would sit up at night and read, sometimes until 2 or 3 in the morning," says Marsha. "And Daddy always looked after people. He liked to see young people grow up and do well."

Philip says his father was his best friend. Knowing Ernie liked to read, grade-schooler Philip would bring him a book a week from the school library. "I didn't even know what the title was, or anything about it. I would just pull a book from the shelf, bring it home for him and he would read it. He loved to read, but he was probably also doing it to make me happy."

Philip remembers that his mother, not Ernie, was the disciplinarian when he and Marsha were growing up. "Even when he was mad, he didn't know how to have a bad temper," he says about his father. "A curse word might slip out if he was yelling at me, but he so seldom swore that, if he did, it was so funny that I would laugh, and the argument would be over."

Marsha agrees that her father was a soft touch. "When we would go to parties and parents would come to pick us up, everyone always wanted Daddy," she says. "First of all, he never got there on time. Then he would sit and talk to the parents. And then the kids would say, 'Oh come on and dance.' He would, and we would get another half-hour or 45 minutes."

Young people seemed to be attracted to Ernie, and he, in turn, was attracted to them. Friends of Marsha's and Phillip's would frequently ask "Pops" for help with their homework. And he was always happy to comply. Ginnie recalled one instance a few years ago: "Ernie and I were having dinner with friends. One friend was a student who was having trouble with her algebra. When dinner was over, Ernie took her aside and helped her with her homework. That woman later told me that he helped her pass a difficult exam."

His colleagues recognized that Ernie liked to see students do well. This trait, combined with his ability as a scientist, impressed those who knew him. He had risen to the top, they said, even without the benefit of a college degree. So in 1972, they decided to reward Ernie as best they knew how — they sought to get him tenure. (Eisen had already given him the rank of research assistant professor in 1968.)

"Many people who had been associated with Ernie thought something ought to be done to recognize his singular service and contribution over the years," says Eisen. "Being black and moving up is one thing, and being without the proper credentials is another. But overcoming both hurdles is really quite extraordinary. It seemed entirely appropriate that he should be recognized by more than a research ladder appointment. And everyone who saw the case we put together agreed."

Osterland was also a key figure in the campaign. He and several others contacted people Ernie had worked with and the response was immediate: More than 100 letters were received from scientists all over the world. "I wasn't prepared for it myself, that there were that many scientists that supported the idea," says Osterland. "It was such an extraordinary set of letters."

One letter was written by Paul Berg, Ph.D., who met Ernie when he first began working with Kornberg, and describes

"Ernie and I were having dinner with friends. One friend was a student who was having trouble with her homework. . . . That woman later told me that he helped her pass a difficult exam."

Virginia (Ginnie) Simms
him this way: "I still remember how astonished I was at how rapidly and efficiently he learned the language, the skills, and the sophistication of biochemistry/microbiology," the letter states. "Before long, he outgrew the technician status and became an important, contributing member of the Kornberg group. He was an equal in all phases of the projects, technically and intellectually. When Ernie said something about an experiment, you could count on it and more often than not his intuition was as infallible as his experiments."

The letters were taken before the executive faculty, and Ernie's appointment was unanimously approved.

"It was an incredible thing that they did anything," says Osterland. "They were a conservative group and we threw them quite a curveball. But Ernie did it, and he did it in a league that is as tough a league as anywhere in the world. His basic brilliance could not be suppressed."

Schlesinger agreed that Ernie wouldn't have gotten tenure unless he had deserved it. "Ernie was an exceptionally appealing and interested friend for the whole scientific community at Washington University. But no one gets tenure at a major university for being a nice guy. It was his scientific acumen and achievements that qualified him.""}

Lee says Ernie, though pleased, was humble about the appointment. "He was embarrassed by, sensitive to, and conscious of other junior faculty who were busting their butts to get tenure," he explains.

After the appointment, Ernie continued to teach and do research. He became more active as a member of the medical school admissions committee, a position he thoroughly enjoyed. "He seemed to have an intuitive ability to assess strengths and possible weaknesses of an applicant," says John Herweg, M.D., associate dean. "He was particularly effective in evaluating minority applicants. When Ernie stated that he felt an applicant could make it at Washington University, the committee accepted the applicant."

Ginnie remembers one black student who, after Ernie's death, told her that at first she didn't know Ernie was black. "Ernie had very light skin," she says. "This girl said she went into her admissions interview thinking she wouldn't have a chance with a white interviewer. Ernie sensed this and gently told her he was black. The girl told me that she relaxed, and she apparently did very well during the interview. She was very grateful to Ernie."

Ernie was characteristically meticulous in reviewing admissions applications, and would often take them home so he could read them more thoroughly. Ginnie says he would sit at their kitchen table and review the paperwork for hours at a time. Another favorite spot for reading was the bedroom; he would lie on the bed with his reading material spread before him on the floor. Ernie was lying like that, the newspaper spread out in front of him, when he died of a heart attack on September 11, 1983.

Ernie began to get sick in 1981. He suffered from transient ischemic attacks and, because his memory was affected, kept notes so he wouldn't forget ap-pointments. He was hospitalized several times. "I couldn't even see him in the hospital, there were so many people visiting him in his room," says Ginnie. "He had cards, flowers and baskets of fruit everywhere. And there he'd be, just sitting on the bed with his legs crossed, four or five others sitting on the bed with him. I just stood at the door and waved to him."

When Ernie was released, he went back to work. Joseph Davie, M.D., Ph.D., the new department head, encouraged him because he recognized how much Ernie contributed to the lab, and how much he enjoyed being there.

When Ernie died, hundreds came from all over the country to pay their respects, and Ginnie still talks about the many telephone calls she got from people who knew him. The flag on Brooksing Tower was lowered in his honor, and Chancellor William H. Danforth wrote a letter to Ginnie that she treasures. And at Ernie's request, his body was donated to the School of Medicine.

In a lot of ways, Ernie is still living, at least in the hearts and minds of those who knew him. There are more tangible signs, as well. The worn green couch in his office, where many a student and colleague rested, conversed, consulted, is still there. A research associate still keeps his notes, and his personnel file in the Department of Microbiology and Immunology is full of photographs and mementos. "Ernie has contributed measurably to Washington University's reputation for research preeminence," says Julian Fleischman, Ph.D., a good friend and colleague. "The university has profited from his presence here."

A narrative describing Ernie's life and scientific contributions, written by David Schlesinger and Julian Fleischman, contributed substantially to this story.
The Washington University and Digital Equipment Corporation have signed an agreement to develop a computing network for both the Hilltop and Medical campuses to support advanced picture communications as well as high-speed text transmission. A major theme of the agreement is the development of advanced professional workstations. The workstations will be capable of transmitting pictures as well as symbols and graphs between the university's two campuses and several academic divisions.

Mallinckrodt Institute of Radiology has already had to link its computers together. Thus, the campus-wide network will expand the scope of Mallinckrodt's ongoing research into computer networking and put the institute in closer touch with the rest of the campus.

The nation's largest center for diagnostic and therapeutic radiology, Mallinckrodt houses research laboratories and facilities for performing X-ray and other imaging procedures for patients from the Washington University Medical Center's hospitals. This commitment to computers—greater than that of any other radiology department in the world—reflects the extensive use of computers in research, diagnosis, and management of patient records.

Mallinckrodt's expertise in networking has contributed to the groundwork for the design of the campus-wide computer network. As well as linking computers and terminals for traditional purposes such as word processing and dissemination of text, the institute is engaged in research which will ultimately provide for the manipulation and transmission of thousands of X-ray images per day.

Mallinckrodt's radiologists already capture images electronically and feed them into computers. Such images are in digital form—each dot is represented by a number proportional to its intensity.

The digital images include computed tomography (CT) scans and magnetic resonance images (MRI—also referred to as NMR), made with radio waves in a strong magnetic field instead of with X-rays. There are also ultrasound images in digital form; digital vascular images, formed by comparing X-ray pictures of blood vessels with and without contrast material; and positron emission tomography (PET) images, which are biochemical and physiological maps of the body created by emissions from radioactive compounds.

A prototype for such a system was installed in Mallinckrodt in 1984. Looking like a chimera of TV sets, a Xerox machine and the control panel of a jumbo jet, the $400,000 Raytel Multimodality Reading Station consumes X-ray films, digitizes them, and displays the resulting images on one of its monitors. Using the keyboard, radiologists can enhance an image to bring out details not readily visible on the film.

They can transmit images to terminals in the emergency room and the new cardiac care unit at Barnes Hospital. Thus, a cardiac care physician can view a patient's X-rays on a terminal minutes after the films are developed.

"Our concept is that computer technology is developing quickly," says Gilbert Jost, M.D., associate professor of radiology, "and that ordinary computer terminals will not be sophisticated enough for the physician of the future. What will be required will be a more sophisticated workstation with a computer within it.

With its commitment to computers and plethora of pictures, Mallinckrodt is ripe for a new method of storing images. Presently the institute is testing a Raytel jukebox—a coffin-shaped box that holds and dispenses 50 8-inch optical discs.

"We are confident that this is going to be an important X-ray storage method of the future," says Jost, "so we are learning more about how the optical disk jukeboxes should be designed and incorporated into our network."

R. Gilbert Jost
Ronald G. Evens, M.D., '64, has been appointed president and chief executive officer of Children's Hospital. Head of the Department of Radiology at Washington University School of Medicine, Evens will continue to occupy that position. Evens' appointment was announced by Andrew E. Newman, chairman of the hospital's Board of Trustees.

Evens, a native of Hermann, Missouri, received his bachelor's degree in economics. Graduating first in his medical school class, he trained at Barnes Hospital and Mallinckrodt Institute of Radiology, where he was chief resident. Later, he completed a Picker fellowship in the graduate schools of business administration and education at Washington University.

In 1971, at the age of 31, Evens was named head of the Department of Radiology at Washington University School of Medicine. He has served as president of the Society of Chairmen of Academic Radiology Departments, the Missouri Radiological Society, and as a member of many committees for the American Medical Association, the National Academy of Sciences, and the Distinguished Eagle Scout Award from the National Council, Boy Scouts of America. He is currently a director, or trustee, of Boatmen's Bank in St. Louis, Health Care Network, the Society of Nuclear Medicine, the American Roentgen Ray Society, and the Washington University Medical Center.

Due to his interests in business and radiology, Evens has served as a consultant to industry, medical centers, universities, and governmental organizations including the National Institutes of Health, the states of New York and California, Congress, and the province of Ontario, Canada. "Dr. Ron Evens has been Chairman of the Children's Hospital Advisory Committee of the Medical Staff since its inception," said Newman, "and he is well known to the Children's Hospital family. He is an eminent physician and an excellent administrator. We are very fortunate in this transition to be able to turn to Dr. Evens, one who has long been involved with and dedicated to Children's Hospital."

Children's Hospital, which opened in 1984, is a 235-bed pediatric health care facility owned by an independent Board of Trustees. Evens succeeds Linn B. Perkins, who joined Children's Hospital as executive director in 1970 and was named president in 1984.

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Volunteers Needed for Hypertension Research

Elderly people from the St. Louis area are needed as volunteers for a national study that will show whether they benefit from treatment for systolic hypertension. Washington University School of Medicine is one of 17 national centers participating in the study, called the Systolic Hypertension in the Elderly Program (SHEP). The project is funded by the National Heart, Lung, and Blood Institute and the National Institute on Aging.

Principal investigator of the local study is H. Mitchell Perry Jr., M.D., professor of medicine and director of the hypertension division at the School of Medicine and a physician at Barnes Hospital. The study is being conducted in cooperation with
St. Louis University School of Medicine.

SHEP is designed to answer a question that has long been debated among physicians: whether lowering systolic blood pressure with drugs will decrease heart attacks and stroke. Also, researchers will investigate whether medication can favorably affect memory and mental powers in people aged 60 and older, and whether lowering systolic blood pressure improves the quality of their lives.

Systolic hypertension occurs when the top number of the blood pressure measurement is 160 or above and the bottom number is less than 90 mm Hg. Millions of Americans have the condition, which is believed to increase the risk of heart attack and stroke, major causes of illness and death. Systolic blood pressure generally rises with age.

Researchers here will enroll 300 men and women aged 60 and older with isolated systolic hypertension, and will select participants through blood pressure screenings at sites throughout the St. Louis area. Nationally, some 200,000 people will be screened to find a total of 5,000 participants.

Participants will be followed for a minimum of five years and will receive free physicals, medications, laboratory tests and electrocardiograms. Approximately half of the participants will be given active medications. All active medications used in the study are approved drugs that are commonly used to treat hypertension.

Volunteers will be carefully monitored, returning initially for visits every two/three weeks, and then every three months. The SHEP medical team will work closely with the participants’ private physicians.

The SHEP clinic is located in the medical building at 100 N. Euclid Ave. Parking is free and, if necessary, participants can be assisted with travel expenses.

More information about SHEP is available through Sharon Carmody or Gerri Barton, 314-367-2547.

Women Needed for New Osteoporosis Study

Researchers at Washington University School of Medicine are seeking women who started menopause within the last five years for a new study on osteoporosis. The two-year study is sponsored by the Section of Applied Physiology in the Department of Medicine. The work is funded by the National Institute on Aging, part of the National Institutes of Health.

Osteoporosis is a serious bone disorder that primarily affects women, said Gail P. Dalsky, Ph.D., principal investigator and a research instructor in medicine at Washington University School of Medicine. Two factors associated with osteoporosis are an inadequate amount of calcium in the diet and a lack of physical activity.

Dalsky noted that American women consume an average of about 500 milligrams of calcium a day, when they should take from 1,000 to 1,500 milligrams daily to maintain a positive calcium balance. Increasing the daily intake of calcium may slow the rate of bone loss, but exercise is one of the few ways to replace bone mass that has been lost, she said.

Currently, Dalsky and other researchers at Washington University Medical Center are completing a study that will show whether bone loss can be restored by combining a special exercise program with an increased daily intake of calcium.

They will continue that approach with the new study, this time combining exercise with increased intake of calcium in hopes of learning if it is possible to reverse bone loss during the early post-menopausal period, when bone loss may occur at a rate two to three times higher than normal.

Volunteers must be in their first five years of menopause, and must be non-smokers and fairly sedentary. Volunteers will not be paid but will receive all tests and calcium supplements free.

Bone density of the spine and hip will be measured in all participants by Dalsky and Stanley Birge, M.D., a researcher with the Division of Bone and Mineral Metabolism and the Program on Aging at Jewish Hospital. The measurements will be performed using dual photon absorptiometry, a non-invasive, highly sensitive technique that involves minimum radiation exposure. Tests also will be done through the Section of Applied Physiology to determine the fitness level of each participant.

Volunteers in the control group will visit the university for testing at regular intervals during the study. Subjects in the exercise group will meet three to four times a week to exercise one hour under the supervision of university exercise physiologists. Exercises will be designed to strengthen bones by placing stress on them, and will include walking, treadmill walking, jogging, bicycling and rowing. Exercise programs will be adjusted to each participant’s ability.

More information about the study is available through the Section of Applied Physiology, 314-362-2399 or 362-2396.

Sutters Create Occupational Medicine Professorship

Lecturers on trends in occupational medicine will speak to area physicians and students as part of a new visiting professorship created by pioneering St. Louis physician Richard Sutter, M.D. ’35, and his wife Betty.

The Richard and Betty Sutter Visiting Professorship in Occupational Medicine has been established at Washington University School of Medicine. Guest lecturers will address such topics in occupational medicine as environ-
ment of the workplace and its effect on employee health, preventive medicine, safety factors, and emergency and definitive surgical care and rehabilitation of the industrially ill and injured.

"Richard and Betty Sutter are people of rare vision," said William H. Danforth, M.D., chancellor of Washington University. "In establishing this visiting professorship, they have provided a valuable tool for educating the medical community, as well as thousands of employers and employees, about the importance of occupational health."

Sutter is founder of the Sutter Clinic, which he established in 1946 to function as the medical department for St. Louis-area industries. The clinic at 819 Locust Street provided outpatient health care for more than 1500 companies. Sutter was director of the clinic until 1984, when it was bought by Barnes Hospital.

Sutter continues to serve as a consultant at the clinic. He also is a lecturer in industrial medicine and rehabilitation in the Department of Preventive Medicine at Washington University, and is on the clinical staffs of Barnes, Deaconess and Lutheran hospitals.

At the 1985 alumni reunion, Washington University School of Medicine presented him with its Alumni Achievement Award for contributions to the community, the university and the field of medicine.

Sutter pioneered occupational medicine (formerly known as industrial medicine), opening the Sutter Clinic in 1946 after commanding a World War II trauma unit from 1941-45. At that time, industrial medicine was primarily emergency care for on-the-job injuries, but Sutter has seen the field evolve to a preventive medicine approach, encompassing industrial hygiene and job safety. He was instrumental in obtaining board certification for the specialty, and has been a diplomate since 1956 on the Board of Preventive Medicine in Occupational Medicine.

Occupational medicine probably reached its greatest prominence, he notes, with the establishment in 1972 of the Occupational Safety and Health Administration (OSHA). Sutter was a member of OSHA's national advisory committee. Sutter is a charter and life member of the William Greenleaf Eliot Society. In 1978, he received the prestigious Health Achievement in Industry Award of the American Occupational Medical Association.

Dr. and Mrs. Richard Sutter (front), M. Kenton King (left), and Samuel Guze (right)

in a continuing national study that compares standard treatment for insulin-dependent diabetes with newer forms of treatment. Washington University is one of 21 medical centers currently participating in the Diabetes Control and Complications Trial (DCCT), sponsored by the National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases. Thirteen subjects are being followed at Washington University, with 278 participating throughout the country. As the project continues, each center seeks an additional 30-40 patients for further study.

The study is designed to help scientists better understand the association between efforts to control blood glucose levels and the early eye, kidney and nerve complications of diabetes. Specifically, they hope to learn whether keeping blood glucose levels as near to non-diabetic levels as possible is a realistic goal, and whether it will prevent, delay or lessen the severity of complications caused by diabetes.

To be eligible for the DCCT, volunteers must be between the ages of 13 and 40, have had insulin-dependent diabetes for at least one year but no more than 15 years, and have no advanced eye, kidney or nervous system complications of diabetes. They must be free of medical or psychological problems that would make it difficult or unsafe to participate in the study, and should not be planning to become pregnant for at least two years. Also, they must be willing to follow the necessary study responsibilities, including record-
keeping and home testing of blood or urine. They must live close enough to St. Louis to keep appointments at the medical center.

All eligible volunteers will be given a complete preliminary medical examination free of charge to determine whether they are eligible to participate in the project.

The DCCT will compare two forms of diabetes treatment, neither of which has a proven advantage over the other. Volunteers must be willing to be assigned to either the standard treatment group or an experimental treatment group on a random basis.

Volunteers assigned to the standard treatment group will be treated with techniques currently used by specialists in diabetes. The standard treatment includes one or two injections of insulin a day, diet, daily glucose monitoring, a formal educational review of different aspects of diabetes care, and routine checkups every three months.

Volunteers assigned to the experimental treatment group will be asked to use some newer techniques to try to achieve lower blood glucose levels. Initially, they will be asked to spend a few days in the hospital to learn to manage the new treatment. The techniques include insulin given either with an insulin pump or with multiple daily injections, diet and blood glucose monitoring. Their formal educational review will cover different aspects of diabetes care, as well as how to use the pump or a program of multiple injections, and how to adjust insulin doses or meal plans. Volunteers in the experimental group will be seen frequently by a physician until they have achieved satisfactory blood glucose levels and have adjusted to the new daily routine, and then once a month for routine checkup.

Volunteers in both groups will receive expert care free of charge from one of the leading diabetes centers in the country. The care will include periodic examinations for early eye, kidney and nerve complications, and immediate specialized care should any complications of diabetes arise during the course of the study. In case of a move to another section of the country, efforts will be made to continue participation at another center.

The local study is directed by Julio V. Santiago, M.D., professor of pediatrics and associate professor of medicine; and Neil H. White, M.D., assistant professor of pediatrics. Santiago and White are on staff at Barnes and Children's hospitals. They are working in collaboration with Michael Noetzel, M.D., assistant professor of neurology and pediatrics; Joseph Olk, M.D., Richard Escoffery, M.D., and Gilbert Grand, M.D., assistant clinical professors of ophthalmology, and Isaac Boniuk, M.D., associate clinical professor of ophthalmology. Noetzel is on staff at Barnes and Children's hospitals. The ophthalmologists are all members of Retina Consultants in the Washington University Medical Center.

More information is available through the DCCT office at Washington University Medical Center (telephone 314-454-6051).

Fischbach Receives Awards

Gerald D. Fischbach, M.D., Edison Professor and head of the Department of Anatomy and Neurobiology, has received a McKnight Award for Research Projects. The McKnight Foundation initiated the McKnight Awards for Research Projects in 1977 to encourage experienced and gifted investigators to direct more of their efforts to the basic mechanisms of memory and diseases affecting memory. Fischbach will receive $150,000 over a three-year period for his research project titled, "Synapse Formation: Induction of Postsynaptic Chemoreceptors."

Fischbach and his associates are investigating events that occur within a few hours after an embryonic nerve cell contacts an embryonic muscle. A cluster of receptors that recognize the transmitter, acetylcholine, appears on the surface of the muscle exactly at the point of nerve-muscle contact. Fischbach believes that the nerve instructs the muscle, in some way, to increase the production of new acetylcholine receptors and to insert them at the point of nerve contact.

Fischbach's team has isolated a molecule from brain tissue that may be responsible for this instructive or trophic effect. He is currently purifying larger amounts of the molecule and further characterizing its actions.

This molecule, or class of molecules, may be important not only at the neuromuscular junction, but also at synapses within the brain. Knowledge of its composition will enable Fischbach and his research group to synthesize it and eventually show where and when in the nervous system the molecule is active.

Most recently, Fischbach received the Jacob A. Javits Center of Excellence in Neurosciences Award. This $750,000 yearly grant will provide five years' support for departmental research.

Gerald D. Fischbach
A scholarship program in physical therapy has been created at the School of Medicine by Electro-Med Health Industries of Miami. The first recipients of the $1,000 scholarships are Carol Eldridge of Gallatin, Tenn., and Sue Berres of Kenosha, Wis. The annual awards are based on financial need, academic achievement and clinical promise.

Electro-Med Health Industries, which supplies physical therapists, is owned by physical therapists Sy and Phyllis Lehman. Their son, Richard C. Lehman, M.D., is a resident in orthopedic surgery at Washington University School of Medicine.

Charles L. Clements, M.D., delivered the School of Medicine's 1985 commencement address. Clements, clinical assistant professor in community health at Albert Einstein College of Medicine, described his experiences delivering medical care in Central America and exhorted the graduating class to be "physician/citizens," bringing moral order in whatever sphere they ultimately practice. A former helicopter pilot in Vietnam, Clements is the author of "Witness to War."

At the commencement ceremonies, the Teacher of the Year Awards were announced by Sheldon E. Litwin, M.D., '85, class president. These awards, inaugurated in 1966, have become an institution at the School of Medicine. Since 1970, each class has selected one preclinical and two clinical faculty for this honor. Over the years, $420,000 has been contributed by the Medical Alumni Association to the medical school in the name of these honorees. Roy R. Peterson, Ph.D., professor of anatomy and neurobiology, captured his fourth award as Teacher of the Year. David Goldring, M.D., '40, professor of pediatrics, and Elliott E. Abbey, M.D., F.A.A.P., clinical assistant professor of medicine (oncology), were selected from the clinical faculty. Goldring led the graduating class in the Declaration of Geneva, an oath of allegiance to the profession that was inaugurated by the class of 1984 because of their wish to reconstitute a pledge akin to the Hippocratic Oath.

Saul Boyarsky, M.D., J.D., professor of genitourinary surgery, has been re-elected to the General Committee of Revision of the United States Pharmacopoeial Convention, Inc., and is chairman of the Committee on Urology.

Boyarsky has served as professor of genitourinary surgery and professor of biomedical engineering at Washington University since 1970. He was head of the Division of Urological Surgery at the School of Medicine from 1970-73, and associate professor of pharmacology from 1970-80. He is currently on staff at Barnes Hospital.

Boyarsky holds bachelor of science and doctor of medicine degrees from the University of Vermont. He held a fellowship in surgery at the University of Vermont and another in physiology at New York University, with an internship at Johns Hopkins Hospital and a residency in urology at Duke University. He received the doctor of jurisprudence degree from the Washington University School of Law in 1981 and was admitted to the Missouri Bar in 1983.

The eighth annual James L. O'Leary Prize for Research in Neuroscience has been awarded to two students at Washington University School of Medicine.

John F. Olsen, a Ph.D. candidate in the neural science program in the Division of Biology and Biomedical Sciences, and Ted Usdin, an M.D./Ph.D. candidate at the School of Medicine, received the prize at the medical school's annual neuroscience symposium. The O'Leary Prize recognizes the most original and important accomplishments in neuroscience research by a pre- or postdoctoral student at Washington University.

Olsen's research examines how the brain processes complex sensory signals to produce appropriate adaptive behaviors. Studies are conducted in bats, which use biosonar or echo location to navigate and catch prey in the dark. Olsen found that, initially, processing of these complex signals occurs in the part of the brain that sends the information to the cerebral cortex. His work has provided insight into how and where complex sensory processing begins, and has increased general understanding of how the brain works in humans and other mammals.

Usdin has purified a peptide that is found only in the brain and that specifically induces synapses between nerve and muscle. Since the discovery at Washington University in the early 1950s of a molecule called nerve growth factor (NGF) by Rita Levi-Montalcini, M.D., there has been a great interest in finding and chemically defining molecules important in the development and maintenance of the nervous system.

Using novel combinations of biochemical techniques, Usdin purified the molecule over a million-fold and has now begun studies to analyze its chemistry. This information is an essential first step in understanding the role of such molecules, which are believed to be fundamental to health, and quite probably to disease of the brain.

The O'Leary Prize was established in memory of the eminent neuroscientist James L. O'Leary, M.D./Ph.D., a professor and head of the Department of Neurology at Washington University School of Medicine.

Brian Andrew Hills, Ph.D., professor of anesthesiology and physiology at the University of Texas Medical School at Houston, delivered the ninth annual Jerome Fiance Lecture. Hills is an internationally recognized expert on the physical properties and biophysics of lungs.

Hills is recognized for observations about the physiologic behavior of surfactant, an important surface lining in the lung. An inadequate amount of surfactant material in the lungs is thought to be a major cause of death in premature infants. He is also an
expert on gas transfer across the lungs and on the medical aspects of deep-sea diving, and has served as a consultant to the National Aeronautics and Space Administration on decompression sickness in astronauts.

He received an undergraduate degree in physical sciences and a graduate degree in chemistry at Cambridge University. He studied chemical engineering at London University and later received his doctorate in physiology at Adelaide University in Australia. Before joining the University of Texas at Houston, Hills taught at Brown University, Duke University and the University of Texas Medical Branch at Galveston.

Paul H. Ward, M.D., delivered the 1985 Joseph H. Ogura Lecture. Ward is professor of surgery and chief of the Division of Head and Neck Surgery at the University of California-Los Angeles (UCLA). He discussed peripheral and central laryngeal paralysis and paresis.

Immediately after the lecture, ceremonies were held dedicating the Ogura Memorial Library, which serves as a resource for the Department of Otolaryngology.

Ward is an internationally renowned head and neck surgeon whose research has centered on laryngeal function and pathology, as well as the body's balance system. He has also helped develop ways to use video monitoring to assess laryngeal function.

A member of the UCLA faculty since 1968, Ward serves as chief attending head and neck surgeon at UCLA hospitals and clinics. Before joining UCLA, he was associate professor of surgery and chairman of the Division of Otolaryngology at Vanderbilt University School of Medicine. He has also been on the faculty of the University of Chicago School of Medicine.

The lecture and library dedication ceremonies honored the late Joseph H. Ogura, M.D., who was Lindburg Professor and head of the Department of Otolaryngology at Washington University School of Medicine when he died in 1983. The Ogura Lectureship was established in 1977 in his honor.

Virginia V. Weldon, M.D., deputy vice chancellor of Washington University School of Medicine, has received an honorary doctor of humane letters degree from Rush University in Chicago.

Weldon received the honorary doctorate at a recent special convocation to inaugurate Leo Merrill Henikoff, M.D., as president of Rush University. While at Rush University, Weldon also delivered a speech on quality in medical education during a symposium on the role of academic health centers in the 21st century.

Weldon is vice president of the Washington University Medical Center, professor of pediatrics at the School of Medicine and a physician at Barnes and Children's hospitals. She joined the faculty in 1968 as an instructor, and was named professor of pediatrics in 1979.

Currently she is chairman-elect of the Association of American Medical Colleges, and is the first woman chosen to lead the association in its 108-year history. She will take office this fall. Weldon is recognized nationally as a spokesperson on issues in medical education and biomedical research, and on legislation affecting health care, especially its costs.

“First-Year Slice of Life,” a photo essay featured in the Spring 1985 issue of OutLook, has been awarded a silver medal by a professional public relations group supporting colleges and universities. The Council for Advancement and Support of Education (CASE) selected the WU entry, created by photographer Cheryl Ungar, from among those in the 1985 CASE Recognition Program for Photography via Print.

Ungar's photo essay depicted first-year medical student Karen Scharenberg, selected as typical of students in their pre-clinical years.

Ruthmary K. Deuel, M.D., associate professor of pediatrics and neurology, received the 9th Annual Research Award of the National Reye's Syndrome Foundation. Deuel was presented this award for a project entitled "Surface Coil NMR in Reye Epicephalopathy."

The National Reye's Syndrome Foundation, Inc., is a non-profit organization with chapters in forty states. The NRFS has pioneered the movement to disseminate knowledge about the disease in an effort to aid in early diagnosis, and also is committed to provide funds for research into the cause, cure, and prevention of Reye's.

An Oncology Dental Support Clinic to provide treatment for patients receiving or anticipating radiation treatment to the head and neck area has been established by the Washington University School of Dental Medicine. The new service will be operated in conjunction with the School's Departments of Diagnostic Services and Maxillofacial Prosthetics and will be supervised by Michael Shrout, instructor of oral diagnosis and radiology at the School of Dental Medicine.

In announcing establishment of the new dental service, Dean George D. Selfridge said that the service is intended primarily for patients who do not presently have a private dentist treating them or for those who are in St. Louis to receive medical treatment and whose own dentists are not available.

Faculty members of the School of Dental Medicine will provide all phases of dental treatment for such patients, including checkups, cleaning, amalgam restorations, periodontal and endodontic therapy. Prosthetic and prosthodontic services, when needed, will be provided by the School's Department of Maxillofacial Prosthetics. Patients preparing for radiation treatment to the head and neck area can receive a pre-radiation dental exam at the School of Dental Medicine or in a hospital.

Anyone desiring more information on this new service can contact Shrout at 314-454-0383.
nyone who is still active in a profession after 50 years is a rarity, considering the hindrances that time hurls at physical and mental stamina. But a handful find their profession as enticing as ever despite the passage of over a half century since their fledgling days as beginners. Yet, I. Jerome Fiance, M.D. '35, has made some concessions: “I always say that I’m semi-retired now,” he says with a chuckle. “I only work 12 hours a day, six days a week.”

During a late-afternoon interview with Outlook, his telephone rang every few minutes, so that he finally asked his secretary to hold all calls. Yet, Fiance finds nothing unusual in this. “I find medicine to be a vocation and an avocation,” he muses. “It is the only hobby I really care about.” He attributes this to his “good health, and the fact that the medical school has made it so pleasant for me to practice medicine.”

“I feel a great debt of gratitude to Washington University School of Medicine,” he continues. “The School makes it possible for many young physicians in private practice to continue their scholarly attitudes toward medicine, and to hone their skills, by making them part of the part-time faculty of the medical school. This gives them an opportunity to enjoy all the cultural and scholarly happenings, not the least of which is the stimulating intellectual relationship with medical students and house staff, and other part-time and full-time faculty.”

For part-time faculty like Fiance, the amount of service can be considerable. For example, there was a time when he went to St. Louis City Hospital on the W.U. service four afternoons a week and worked on two six-week ward services for junior medicine. In addition to ward services at Jewish Hospital, he worked in the pulmonary clinics at Jewish and Barnes hospitals. Later, when he was shifted from City Hospital to other than returning value for value received.”

Selected by the class of 1981 as Clinical Teacher of the Year, Fiance has a flair and enthusiasm for teaching that students appreciate. And he, in turn, values his role as docent: “When my former students come back from around the country and greet me as a former teacher, that’s the greatest pleasure I have.”

The Flance Visiting Professorship in Pulmonary Medicine was established in 1976, on Fiance’s 65th birthday, by friends and patients. Each year, this lectureship enables the division of pulmonary medicine to bring in a prominent physician for a series of seminars and lectures and a critique of research programs. “Doctors are fortunate,” says Fiance. “They occupy a special place in our society and in the hearts of people they serve. If [the lectureship] is one of the rewards, that’s fine, but I wouldn’t want anyone to get the wrong idea — the feet are still made of clay.”

Flance, now professor of clinical medicine, has a sense of mission that encompasses more than teaching. In 1953, he instituted the Home Care Program at Jewish Hospital, serving 11 years as its director. At that time, says Fiance, it was the first home care pro-
cians in the group are proud of the years spent contributing their services.

And as a loyal son of Washington University, Fiance has seen to it that his alma mater has not gone wanting. A member of the Planned Giving Committee, he has acted as facilitator, enabling many of his patients and friends to approach the university despite their perception of it as a "cold, intimidating force. There are a lot of people who feel very warmly toward the university and are interested in making a gift," muses Fiance, "but they're a little reluctant to come forth because the university looms so large in their imagination that they almost become a little afraid." For example, one of his patients - Mrs. Selma Seldin - expressed an interest in helping the university, but was unsure as to how. So she asked for Fiance's help. Subsequently, the Seldin Professorship in Pulmonary Medicine was established.

"Dr. Fiance has the unique ability to sense when people are interested in making a gift to the School of Medicine," says Jack Sieffkas, director of Medical Alumni and Development. "Because of their confidence in him, he can assist them in meeting with the right people here and in making their decisions about what to do with their money. By being supportive and helpful to them, everybody benefits: they've satisfied their philanthropic interests; Dr. Fiance enjoys being helpful; and naturally, the School of Medicine, and everyone it serves, gains. Dr. Fiance's special help makes him very important to the School of Medicine."

Fiance relishes his role as facilitator and thinks other physicians could do the same, "providing the university would give them the same feeling that they gave Jerry Fiance - the same feeling of belonging." He points out that not all departments at the School of Medicine follow the Department of Medicine's example in cultivating private practitioners as part-time faculty. "There are tremendous advantages for the university in developing a cadre of private physicians who have teaching interests and abilities, who also have a scholarly attitude toward medicine, and who are willing to spend time and effort to participate in the teaching programs of the medical school. These part-time faculty also make superb messengers for the university in the broad community.

"I could not practice the quality of medicine that I feel I do, and want to do, were it not for my relationship with the School of Medicine - it would have been impossible."

For Fiance, the advantages of an association with the School of Medicine are clear: "Some physicians in fields other than medicine don't have the feeling of really belonging to the university family," he says. "Many want to, but the university has to come forward. If you belong to a family, it's very easy to help all members. It becomes the natural thing to do. The School of Medicine has given me a feeling of belonging - when I walk into Barnes Hospital, or Jewish Hospital, I feel like I belong; I'm home."

Medical Alumni Return for Reunion

More than 200 physicians from throughout the country returned to St. Louis to attend Reunion 1985, sponsored by the Washington University Medical Center Alumni Association. A highlight of the reunion was the scientific program, which included presentations by faculty members and guests of the Washington University School of Medicine. The program featured research on exercise and its benefits to health, especially in relation to ischemic heart disease, aging, osteoporosis, and glucose intolerance and insulin resistance. In addition, local and national authorities discussed issues in health care financing.

New treatments in the area of heart disease were also a discussion topic. Faculty members from the Department of Cardiology presented newly released study results on the effectiveness of t-PA, or tissue plasminogen activator, a drug that stops heart attacks in progress. There was also a talk on new technology for the surgical treatment of cardiac arrhythmias. Karl H. Muench, M.D., a member of the class of 1960 who is now on the faculty at the University of Miami, discussed HLA genetics in resolution of disputed paternity.

Reunion weekend also included a number of social activities, among them a welcoming cocktail party, a walking tour of downtown St. Louis, and dinners for each reunion class. The reunion concluded with a dinner/dance, where Alumni Achievement Awards and Alumni Faculty Awards were presented.

The alumni association presented four alumni achievement awards for contributions to the association, three alumni/faculty awards for career accomplishments and a special citation for distinguished service.

Recipients of the alumni achievement awards include Richard Sutter, M.D. '35, Ralph Berg, M.D. '26, Ellen Shattuck Loeffel, M.D. '35, and John P. Roberts, M.D. '45. Alumni/faculty awards were presented to Edward Massie, M.D. '35, Elmer Burrell Brown, M.D. '50, and David Goldring, M.D. '40. Marvin H. Brennecke, M.D. '30, was awarded the special citation for distinguished service.

Sutter is founder and director of the Sutter Clinic, Inc., which has provided occupa-
tional medical service to more than 1,500 companies in the St. Louis metropolitan area since 1946. He continues to serve as a consultant at the clinic, bought in 1984 by Barnes Hospital, and as a lecturer in the Department of Preventive Medicine and Public Health.

Berg is a respected thoracic surgeon on staff at Sacred Heart Medical Center and obstetrics and gynecology in St. Louis for over 35 years. She has also provided years of service to the St. Louis community, devoting time to the YWCA’s Board of Directors, the Social Health Association, the Health and Welfare Council and the United Way.

Roberts is on staff at St. Luke’s and Faith hospitals in St. Louis. In addition to his medical accomplishments, he is founder of the National Museum of Transport, a one-of-a-kind exhibit that preserves dozens of locomotives and other forms of transportation. He is currently secretary of the Transport Museum Association, and editor of St. Louis Metropolitan Medicine.

The alumni association honored Massie for excellence as a researcher and teacher. He helped pioneer the use of computers to interpret electrocardiograms, and spearheaded efforts to expand and upgrade several coronary facilities at the medical center. He is professor emeritus (clinical) of medicine and former chief of the cardiovascular clinic at Washington University.

The alumni association honored Massie for excellence as a researcher and teacher. He helped pioneer the use of computers to interpret electrocardiograms, and spearheaded efforts to expand and upgrade several coronary facilities at the medical center. He is professor emeritus (clinical) of medicine and former chief of the cardiovascular clinic at Washington University.

Golding had served as director of the division of cardiology in the Department of Pediatrics until 1981, when he was named director emeritus. He received the alumni/faculty award for his service and leadership to improve health care and for his work for the future of education and the future of Washington University.

Brenneke was chosen to receive a special citation for distinguished service for his many years of devotion to the people of Hawaii. He was a pioneer in “plantation medicine,” providing medical service to employees of four sugar companies, their dependents and the rest of the Kauai community.
Fredrick Lee Liebolt, M.D. ’30, has endowed a chair in premedical sciences at the University of Arkansas. The president and chancellor of UA hosted a dinner in Liebolt’s honor at the University Club in New York City, where he resides.

Joe B. Hall, M.D. ’48, is governor of the Arkansas Chapter of the American College of Physicians.

Walter A. German, M.D. ’51, is president of the Missouri State Medical Association.

Richard R. Dewey, M.D. ’55, is clinical professor of medicine at Stanford Medical School.

Nicholas T. Kouchokos, M.D., ’61, cum laude, has been elected president of the Washington University Medical Alumni Association for 1985-6. Kouchokos recently returned to Washington University as John M. Shoenberg Professor of Cardiovascular Surgery and is chief of cardiovascular and thoracic surgery at Jewish Hospital.

Previously, Kouchokos was clinical professor of surgery at University of Alabama.

School of Medicine, where he served as vice-director of the division of cardiovascular and thoracic surgery from 1974-7. He had been at UA since 1967 after completing internship and residency in surgery at Barnes Hospital. While at Barnes, he served as assistant resident and later as chief administrative resident.

A member of AOA, he is affiliated with several professional societies and is on the editorial boards of many medical publications. His many honors include three Physician Recognition Awards from the AMA. He has written or co-authored over 200 journal articles and over 75 abstracts.

Donald H. Stewart, M.D. ’61, has been elected to a three-year term as director of the American Association of Neurological Surgeons. Stewart is clinical assistant professor of neurosurgery at the Upstate Medical Center and is on staff at Crouse-Irving Memorial Hospital and VA Hospital in Syracuse.

After medical studies at W.U. and St. Thomas’ Hospital Medical School in London, Stewart completed internship and residency at Duke Hospital, Durham, NC, and the State University of New York Upstate Medical Center in Syracuse. He has served as president of the Congress of Neurological Surgeons and other professional societies and has chaired many professional committees.

Leonard Jarett, M.D. ’62, professor and chairman of the Department of Pathology and Laboratory Medicine at the University of Pennsylvania School of Medicine, has served as president of the American Journal of Pathology and Laboratory Medicine. Jarett is also chief of pathology and laboratory medicine at the Hospital of the University of Pennsylvania (HUP).

Jarett holds the B.A. (with honors) and M.D. (cum laude) degrees from Rice Institute and Washington University School of Medicine, respectively. He was a member of Alpha Omega Alpha. In 1982, he received an honorary M.A. degree from the University of Pennsylvania.

He served his internship and residency at Barnes Hospital, and from 1964 to 1966 he was a research associate with the National Institutes of Health Laboratory of Biochemistry, Section of Cellular Physiology, and a surgeon with the U.S. Public Health Service.

Subsequently, he was assistant professor of pathology and instructor in medicine at the Washington University School of Medicine. A John and Mary R. Markle Scholar in Medical Science, he was named associate professor of pathology and medicine in 1969 and became director of the Central Diagnostic Laboratories of Barnes Hospital.

In 1973, Jarett was promoted to professor of pathology and medicine and head of the division of laboratory medicine at Washington University. He was named professor and chairman of the Department of Pathology and Laboratory Medicine at Penn in 1980.

Jarrett is the author of numerous medical articles relating primarily to his research in diabetes. He is a member of the editorial boards of The American Journal of Pathology and the Journal of Clinical Laboratory Analysis. He was the co-editor of Gradwohls Clinical Laboratory Methods and Diagnosis, published in 1980. As a diabetes researcher, he has served as a consultant on the Medical Science Advisory Board of the Juvenile Diabetes Foundation, the Pennsylvania Diabetes Task Force, the steering committee of the National Diabetes Research Interchange, Juvenile Diabetes Foundation, and the Foundation’s Medical Science Advisory Committee. A member of the Metabolism Study
Section of the National Institutes of Health, he holds the David Rumbough Award of the Juvenile Diabetes Foundation and the Cotlove Award of the Academy of Clinical Laboratory Physicians and Scientists.

William N. Neubauer, M.D. '69, is serving a two-year term as chief of staff at El Dorado Medical Center. He is on the board of directors of several medical and philanthropic organizations and is a member of the steering committee of the Tucson Program for Affordable Health Care. Neubauer is a general surgeon living in Tucson, AZ.

Leonard Jarett

Jarett is a member of the American Society for Clinical Investigation, the Association of American Physicians, the Academy of Clinical Laboratory Physicians and Scientists, the American Diabetes Association, the American Association of Pathology, the Philadelphia College of Physicians and Surgeons, and is a Fellow of the College of American Pathologists.

Harvey S. Kantor, M.D. '62, is director of the division of medical microbiology, Department of Pathology, at Chicago Medical School. He is also chief of the medical microbiology laboratory, VAMC, North Chicago.

Lewis H. Koplik, M.D. '65, has been elected to the Board of Directors of the National Abortion Federation.

Allan J. Goldstein, M.D. '67, chairs the committee on quality assurance of the American Academy of Otolaryngology — Head and Neck Surgery. He is vice-president for medical affairs at the Leila Post Montgomery Hospital in Battle Creek, MI.

Richard M. Wachsmann, M.D. '72, has made several media appearances and written a pamphlet, "Cocaine Today," in order to help combat the use of this drug. He is a psychiatrist residing in Del Mar, CA.

Kenneth S. Rotskoff, D.D.S., M.D. '75, moderated a session on oral maxillofacial surgery for the geriatric patient at a recent clinical congress of the American Association of Oral and Maxillofacial Surgery. Rotskoff, a partner in the Orofacial Pain Center in St. Louis, also published a paper in the Journal of Oral and Maxillofacial Surgery, August 1984, describing nine years' surgical results on patients who received a mandibular staple bone plate. He also received the AMA's 1984 Physician Recognition Award for Continuing Education.

Stuart R. Schlanger, M.D. '77, completed residency in internal medicine at Creighton Medical School, Omaha, Nebraska. He is in private practice in Omaha and also has a rural office in Missouri Valley, Iowa. Schlanger also writes a medical column for a nationally distributed magazine.

Harold Lee Rush Kent, M.D. '78, completed training last summer in general surgery at the Naval Hospital in San Diego. Currently, he is training in cardiothoracic surgery in a program co-sponsored by the Naval Hospital and UCSD.

Frances Allene King, M.D. '78, is board-certified in surgery and completed a fellowship in oncolgic surgery at M.D. Anderson Tumor Institute. King is a member of the Harris County Medical Society and is a general surgeon practicing in Houston.

Mark Boles, administrator of the Rehabilitation Institute of Oklahoma, has been elected to the governing council of the American Hospital Association's Section for Rehabilitation Hospitals.

Boles is a 1976 graduate of Ohio State and received the master's degree in health administration in 1983. While at Washington U., he served as an administrator at Barnes Hospital.

Stephen B. Collins has accepted a position with Voluntary Hospitals of America Management Services in Tampa (FL). VHA Management Services supports not-for-profit hospitals across the country.

Formerly, Collins was an administrator for Lake Charles Memorial Hospital. He is a past chairman of the Louisiana Hospital Association and has served as board member for many philanthropic and medical organizations.

John S. Dubis has assumed executive vice presidency of Freeman Hospital. Dubis has been with the hospital for two years.

James K. Elrod, president of the Willis-Knighton Medical Center (LA), is a trustee of the American Hospital Association. He is the first Louisiana hospital administrator ever named to the 25-member board.

Elrod has been president of Willis-Knighton Medical Center for 19 years. He is also president of South Park Hospital and DeSoto General Hospital in Mansfield.

He received his undergraduate education at Baylor University. After earning the master's degree in HAP from Washington U., he completed two years of law school and served a residency at Mississippi Baptist Hospital in Jackson. Elrod has served as president of the Louisiana Hospital Association and later as trustee. Since 1980, he has been a member of the AHA House of Delegates.

D. Max Francis, president
of United Hospital Center in Clarksburg (WV), was vice-chairman/chairman-elect of the West Virginia Chamber of Commerce for its 1984-85 organization year.

Francis did his undergraduate work at Kansas Wesleyan University. After obtaining his master's degree in HAP from Washington U., he assumed presidency of the UHC in Clarksburg. He served as president of the Clarksburg Area Chamber and as a member of the state chamber board of directors. Francis also served on the boards of Blue Cross-Blue Shield and the West Virginia Hospital Association.

Robert L. Graves is executive vice-president and CEO of Morton Plant Hospital in Clearwater, FL. Graves has served as an administrator there for seven years.

Graves received his undergraduate degree from Muskingum College and is an adjunct faculty member of Washington U. School of Medicine and the University of Alabama at Birmingham. A member of the ACHA and licensed nursing home administrator, he serves on the board of Directors of Hospitals Home Health Care of Pinellas County.

Ken Jones is assistant administrator of Mid-Jefferson County Hospital (TX). Formerly, he was associate executive director of Carolina Area Hospital in Puerto Rico. He earned the master's degree in HAP in 1975.

Richard E. Long has been named president of Freeman Health Services, Inc., parent corporation of Freeman Hospital in Joplin (MO). Long has been an administrator there for the past 20 years.

IN MEMORIAM

Ellis Margolin, M.D. ’30, died on April 27, 1985. He had retired in 1974 after a 37-year career on pathology at Springfield State Hospital in Sykesville, Md., where a library was named in his honor. A native of Minsk, Russia, he obtained his undergraduate education at Johns Hopkins. He was an emeritus member of the AMA, American Clinical Society, International Academy of Pathology, and the Maryland Society of Pathologists, of which he was a charter member.

Carl Zelson, M.D. ’30, died in December 1984. He had retired in 1975 after a career that included caring for children in what was known in the 1930s as Hell's Kitchen, on the west side of Manhattan. He became part-time director of nurseries for premature infants for the New York City Board of Health during the 1950s. Later, he was named professor of pediatrics at New York Medical College and director of neonatal nurseries at Metropolitan Hospital in East Harlem, and at Flower and Fifth Avenue Hospitals on the Upper East Side.

At Metropolitan, he conducted studies of infants born to addicted mothers and found that those born to women taking methadone had more severe reactions during withdrawal than did babies of heroin-addicted mothers not on methadone maintenance. His findings made him critical of methadone maintenance programs.


Frances M. Love Huck, M.D. ’42, died on February 12, 1985.

Gerald A. Yaeger, M.D. ’50, died on October 31, 1984.

Sister Jeffrey Engelhardt, M.D. ’78, died September 15, 1984. Sister Jeffrey, born Mary Jane Engelhardt, is the only religious sister to have ever graduated from the School of Medicine. She had been a member of the Sisters of St. Francis of the Holy Family since 1959, entering the order at age 18. She received a B.A. in mathematics from Briar Cliff College (Iowa) in 1963 and taught mathematics and science classes before entering the School of Medicine. She completed family practice residency and practiced with the Medical Mission Sisters Clinic for 10 months and later became a medical consultant to the Sisters of Mercy.

Sister Jeffrey originated, edited and published the first national newsletter for religious physicians, “The Lifeline.” She wrote articles for religious and medical publications and served as an editorial board member and manuscript and book reviewer for several medical publications. Her struggle against metastatic breast cancer supplied her with dramatic insights on living and dying.

Luther L. Terry, FHS, died March 29, 1985. Terry was surgeon general of the United States from 1961-65 and was responsible for the historic government report linking cigarette smoking to heart disease and cancer. In 1965, at Terry's urging, Congress required tobacco companies to include a warning label on packs of cigarettes. In 1971, Terry helped ban cigarette ads from radio and television.

A former smoker himself, Terry devoted much of the last two decades of his life to warning Americans about the dangers of smoking. After stepping down as surgeon general, he became vice president for medical affairs at the University of Pennsylvania, a post he held until 1971. He taught at the medical school there until 1982. From 1973-80, he was president of University Associates of Washington, a nonprofit consulting firm. From 1980-83, he was corporate vice-president for medical affairs of ARA Services Inc. of Philadelphia.

A cardiologist, Terry was an authority on hypertension. His many awards included the distinguished service award of the American College of Cardiology and the distinguished service medal of the USPHS.
The new emergency facilities at Barnes Hospital, a joint undertaking between the hospital and the School of Medicine, are shown at its recent dedication. The new facility has tripled the size of the old unit. Its 21,000 square feet contain expanded facilities for radiology and a total of 18 treatment rooms. There is a seven-bed unit for patients who need extended observation or who are awaiting admission to the hospital. In addition, the facility has an enlarged, improved waiting area for patients' families. Patients who need to be transported to surgery or patient floors can be moved without encountering the general traffic on the hospital's first floor.

A drive-through ambulance port shelters the unloading area on the new driveway connecting Wohl and Renard bridges.

The project is one of many efforts undertaken by Barnes Hospital in an attempt to retain and expand its present role as a premier provider of medical care in the St. Louis area. In “Medical Marketshare,” beginning on page 6, writer Caudace O’Connor describes the efforts of all the hospitals at Washington University Medical Center to meet the challenges of providing medical care into the 21st century.
The Hot Docs are rapidly ascending to "tradition" status at the School of Medicine. In this issue's Studentstage feature beginning on page 10, writer Gail DiBernardo chronicles the history of this group with a musical bent.