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# RECORD

Indexed  
 **Washington**  
 WASHINGTON · UNIVERSITY · IN · ST. LOUIS

Vol. 14 No. 29/April 26, 1990

## St. Louis Dancers' final performance honors Mertz

St. Louis Dancers and guest artists will present an evening of stimulating and theatrical modern dance and popular ragtime tunes in a gala farewell performance at 8 p.m. May 4 and 5 in Edison Theatre.

This is the 11-year-old company's final performance in St. Louis. The weekend's festivities include a reunion of former dance students and faculty to honor Annelise Mertz, founder and artistic director of the company. Mertz also is a long-time champion of dance in St. Louis and professor emeritus of dance at the University.

The program will feature guest appearances by Daniel Shapiro and Joanie Smith, an exciting young dance duo known for its "tongue-in-cheek" style, and ragtime pianist Steven Radeck.

Shapiro and Smith have performed with Murray Louis and Alwin Nikolais, touring internationally for more than 10 years. The duo's choreography is noted for its striking imagery and gentle wit.

The concert also will premiere a dance piece by company member Gale Ormiston, a former dancer with the Alwin Nikolais Dance Theatre and Washington University artist-in-residence in dance. Ormiston choreographed and composed the music for the piece, titled "Self Realized."

Also to be performed are "Ceremonial Rites," Mertz' signature piece set to Phillip Glass music; "On the Dark Shore," by Michael Ballard Podolski with music by Bartok; and a duet by renowned choreographer Murray Louis staged by Podolski, titled "Calligraph For Martyrs."

The second part of the program, titled "Forever Ragtime," will include "Seaside Rag" and "Charleston Rag," set to music by Scott Joplin. Radeck, a renowned ragtime and classical musician, will accompany the dancers and entertain the audience with popular ragtime tunes throughout the program's second half.

Tickets are \$12; \$9 for senior citizens and Washington University faculty and staff; and \$6 for students. For more information, call 889-6543.

## Mammography van will visit Hilltop

Mallinckrodt Institute of Radiology's Mammography Mobile will be on the Hilltop Campus from 8 a.m. to 3 p.m. Thursday, May 3, to screen women over 35. The van, which will be in the parking lot west of the Mallinckrodt Center, features the latest low-dose equipment sensitive enough to detect the first stages of breast cancer.

The cost of the procedure, which takes about 20 minutes, is \$50. Payment is by credit card or check; cash cannot be accepted.

The University Health Services

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Guest artists Dan Shapiro and Joanie Smith will perform "Almost a Tango" and "Cafe" May 4-6 in Edison Theatre. Their appearance is part of a farewell gala performance by the St. Louis Dancers and Annelise Mertz, founder and director of the company.

## 'Disappearing before your very eyes'

# Maps reveal extent of Madagascar deforestation

Maps derived from 1972 and 1985 Landsat satellite images and 40-year-old French aerial photographs provide the first historical proof of the dramatic effects of deforestation in Madagascar. The island nation, located off the east coast of Africa, is considered a jewel among the Earth's ecosystems.

The maps, developed by Glen Green, Ph.D., research associate in the Department of Earth and Planetary Sciences, and Robert W. Sussman, Ph.D., professor in the Department of Anthropology, portend bleak news that is sure to disturb the world's conservationists.

Since 1950, there has been a 50 percent loss of tropical rain forest in Madagascar. Forest loss between 1972 and 1985 averaged 428 square miles annually. Only 34 percent of the nation's rain forest thought to have existed at the time of colonization some 1,500 years ago now is intact.

Tropical deforestation has a devastating environmental effect both locally and globally. Since the 19th century, global carbon dioxide levels have risen 30 percent, an increase scientists blame on the burning of fossil fuels and the cutting and burning of millions of trees that use and store the gas. The two practices in turn contribute to the greenhouse effect and impair the ability of some deforested areas to recycle rainfall.

Species of plants, animals and microorganisms are disappearing daily from Madagascar, a phenomenon traced chiefly to the practices of subsistence "slash-and-burn" farming and the cutting of trees for charcoal, the chief energy form in the Third World country. Deforestation, the maps reveal, is spreading even into reserves that the Malagassy government has set aside as protected areas.

Green and Sussman published an interpretation of the maps and an overview of the situation, "Deforestation History of the Eastern Rain Forests of Madagascar From Satellite Images," in the April 13, 1990, issue of Science magazine.

If deforestation continues at the same pace in Madagascar, the authors warn, only forests on the steepest slopes will survive over the next few decades. Green and Sussman say that deforestation in Madagascar has been most severe in areas of high population over the past 40 years, although recently the percentage of deforestation in low-density areas is approaching the level of destruction mapped in high-density areas nearly a quarter-century ago.

While Madagascar's eastern rain forests have drawn the most attention from world conservationists, Green and Sussman say the satellite images show that the southwestern dry, deciduous forests also have been cut at an alarming rate in the past two decades. This phenomenon coincides with a large population boom, a severe economic downturn in Madagascar and mass migration to the cities. These forests are being cut primarily for charcoal use because the people cannot afford gas or electricity. A bag of charcoal costing roughly \$2 a bag will last a family of four about two months. The southwestern dry forest, the scientists say, contains some of the most unique biological communities in the world.

"For the most part, the largest tracts of rain forest left in Madagascar are in the northeast in areas of low population and relatively high altitude," says Green. "Most of the remaining forest area in the country has simply been out of reach of the population."

## Satellite mapping

The maps are highly valued by the science community because they are the only graphic documentation of deforestation in Madagascar showing a systematic and historical process at work. The Green-Sussman calculations show that roughly 14,700 square miles of rain forest were intact as of 1985, compared to 29,000 square miles in 1950. The eastern rain forest at the time of colonization in 500 A.D. is estimated to have extended over

43,200 square miles, according to Green.

"Previous studies were ambiguous over whether the deforestation rate is increasing or decreasing," notes Green. "Our study provides an example of how remote-sensing data can be used to map forest extent and to monitor deforestation. Landsat images are already available for most of the Earth's tropical forests. Many of these images are nearly two decades old and thus provide a remarkable and yet, to date, essentially unused data base."

The study was funded by the Fulbright Scholars Program, the Missouri Botanical Garden, National Geographic Society, Pew Midstates Science and Math Consortium, Washington University and the World Wildlife Fund.

The maps also are valuable as a source to explain the deforestation dilemma in a relatively inexpensive and simple manner, says Sussman.

"You can see the rain forest disappearing before your very eyes," says the biological anthropologist, who, along with botanists at the Missouri Botanical Garden in St. Louis, conceived the idea five years ago to measure the rate of deforestation by studying satellite images.

"At the time, no one knew how much rain forest was left in Madagascar, and we wondered how it could be measured," he says. "I was introduced to Glen, who was working on a doctorate in earth and planetary sciences at Washington University. His interests are in satellite imaging, interpretation of deforestation and forest conservation. It was a perfect match."

To assemble his maps, Green used black and white multiscanner Landsat images at the wavelength most comparable with the aerial photographs taken by French scientists H. Humbert and G. Cours Darné in 1950. Green also purchased 65 negatives from the government archival agency Earth Resources Observing System (EROS), located in Sioux Falls,

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## Inside: MEDICAL RECORD

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• First U.S. case of rare fungus that causes sinus infection is reported here. Page 5

• Senior citizens pump up for muscle mass study. Page 6





Junior Michael E. Jaffe, a partner in University Trucking, is ready to haul students' possessions home.

**'We're just a student organization working for students'**

## Going home? University Trucking will transport your goods with care

For many students, it may seem like only yesterday that they were packing their belongings, saying goodbye to family and friends and heading to St. Louis to begin their fall classes at Washington University.

However, as the students enter their final week of classes, many are realizing that they not only have to worry about finishing papers and studying for finals, but how to get those prized possessions, ranging from 10-speeds to teddy bears, back home in a secure and economical way.

Each semester, some 300 students resolve their moving dilemmas by shipping property between their home and school residences through University Trucking, a student-owned and operated shipping company.

University Trucking will haul anything the student wants shipped. "We've even transported mannequins students use in fine arts classes," proclaims junior Michael E. Jaffe, a French major from Long Island, N.Y., who runs the company along with his three business partners: Ira S. Berg, a Spanish and political science major from Woodcliff Lake, N.J.; Jason A. Harkavy, a business major from North Brunswick, N.J.; and Lawrence J. Wolfson, a business major from Purchase, N.Y. The partners are all members of the Alpha Epsilon Pi fraternity. The company was founded 12 years ago by two other fraternity members and was passed along to the partners by their fellow fraternity brothers.

Students who send goods back home through Jaffe's service get their possessions picked up at their doorstep by a University Trucking em-

ployee. The worker then transports the wares to one of the company's two rented Hertz trucks stationed at the First Congregational Church of St. Louis near the residence halls. The company serves students who live on and off campus.

The next day, Jaffe and his partners drive the 24-foot Hertz trucks to the students' East Coast homes. University Trucking stops in 11 municipalities, including those in the Washington, D.C., area, Connecticut, New York City, Boston, Philadelphia and cities located on the northern and southern shores of Long Island and New Jersey.

When students are ready to ship their property back to the University for the fall semester, they can arrange to have the goods picked up at their homes or they can drop packages off at central locations. Because the fall semester is the company's busiest, Jaffe and his partners hire professional drivers, equipped with 53-foot trucks, who transport the students' wares to the University. The goods are conveniently stored for the students until they return to campus.

Jaffe says his company offers students a convenient and economical way of moving property. He points out that University Trucking, stationed on the South-40, picks up and makes deliveries directly to the students' rooms, whereas most commercial companies only deliver packages to the Wohl Center mailroom and students must later pick them up. That can be quite a hassle when you have five to 15 items to pick up, he says. Except for furniture, University Trucking customers are required to

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## Deforestation — *continued from p. 1*

Iowa. The negatives were produced from digital data the Landsat satellites beamed down by microwave. Green assembled 38 of the negatives into mosaics on a one- to one-million scale that starkly reveal the decreased rain forest from 1950 to 1985.

Madagascar is home to approximately 200,000 species of life, which represents nearly five percent of the Earth's total biodiversity — the various forms of plants, animals and microorganisms that live on the planet. Through the process of continental drift, Madagascar broke away from mainland Africa at least 150 million years ago, and for 60 million years was on its own pristine path of evolution, allowing the development of thousands of species that evolved uncontested from other more advanced species found elsewhere.

Among the more famous denizens unique to the island's 230,000 square miles (it's the fourth largest island in the world), are the lemur, the oldest distant relative of *Homo sapiens*, and many species of cactus-like plants from the *Didiereaceae* family, plus hundreds of lesser-known plants and microorganisms.

### Collaborative efforts key

Sussman, who has specialized in the study of the 24 living species of lemurs — 14 are known to be extinct — has made key contributions to wildlife preservation in Madagascar. He was a catalyst, with colleagues from Yale University and the University of Madagascar, in establishing Beza Mahafaly, a government-protected reserve, which opened in 1978. He sees the collaborative nature of his work with Green as an essential element in fostering the development of conservation biology.

"We'd like to see our study develop into a formula for others who are seeking to protect the world's environment," he says. "When we began our work, I had no knowledge of mapping from satellite data, and Glen knew only a little about Madagascar. Now our knowledge is more interchangeable. Such collaboration is paramount to understanding ecological problems of the Third World."

Satellite images alone, Sussman says, cannot explain the entire deforestation phenomenon. Ethnographic studies in conjunction with satellite images can help explain trends in deforesting.

"You have to know the people and how to work with them," he says. "They are not being purposefully wasteful. They often don't have much of a choice — it's either cut the forests or starve their children. You can't argue with that kind of logic. They need more choices. They need instruction and assistance in sustainable agriculture — farming practices that conserve the soil — and agroforestry to better provide the population with food and fuel."

### Archives in danger

"All the world's rain forests could have been mapped by the late '70s, but there was never a concentrated effort to do so," says Green. "There is still time to accomplish this, but we have to save the data in the archive, which is entirely stored on magnetic tape and deteriorating rapidly. Nearly half of the digital information I sought to piece my maps together was inaccessible; the tapes were too old. This priceless archive can be saved if the data are transferred to compact discs."

Green and Sussman intend to continue their research on the deforestation of Madagascar by studying more Landsat images and applying three parameters — population, land slope and percent of forest remaining — to predict trends for the next 35 years.

"The deforestation of Madagascar is a key study that has implications for other ecosystems," Green says. "If there are changes in global warming predicted in the future, whole ecosystems may have to move hundreds of miles north in the next century to survive. We're hopeful the situation in Madagascar will improve. But to monitor the world's health, we'll continue to need viable sets of data from satellite images that will present an historical perspective valuable 50 to 100 years from now."

*Tony Fitzpatrick*

## 17th-century Italian and German music is focus of meeting featuring concerts

The American Heinrich Schutz Society Conference will be held from 2 to 5 p.m. on Friday, April 27, and from 9 a.m. to 5 p.m. Saturday, April 28, in Brown Hall Lounge.

The conference, which includes panel discussions and paper presentations, will examine "Cross-Currents Between Italian and German Music in the Seventeenth Century." Featured speakers represent Yale University, Case Western Reserve University, Washington University, Eastman School of Music, and the universities of Alabama, Illinois at Urbana-Champaign, Pittsburgh and Rochester.

A free concert by the University of Illinois and Washington University chamber choirs also will be presented at 8:30 p.m. April 27 in Our Lady of Lourdes Catholic Church, 7148 Forsyth Blvd.

A second free concert will be held at 12:30 p.m. April 28 in Holmes Lounge. The performance, featuring music by Schutz and nine of his contemporaries, will be performed by tenor Bruce Carvell, harpsichordist Paul Harris, violinist Marsha Curtis Hussung and Gary Zink on cornett.

Heinrich Schutz was one of the most prominent German Baroque composers of the 17th century. He

studied in Italy with fellow composers Giovanni Gabrieli and Claudio Monteverdi. The American Schutz Society is a member of the International Heinrich Schutz Society, which promotes the performance and study of music by Schutz and his contemporaries.

Jeffrey Kurtzman, Ph.D., chair of the American Schutz Society and of the University's Department of Music, is organizer of the event.

The conference, which is free and open to the public, is sponsored by the Department of Music. For more information, call 889-5574.

## Van — *continued from p. 1*

and the Nonacademic Personnel Advisory Committee arranged to bring the mobile unit to campus.

To make an appointment, call 362-7111 by May 1. Walk-ins will be taken on a first-come, first-served basis during available time.

The MIR, at the Washington University Medical Center, is a pioneer in radiology and diagnostic imaging. The van is staffed by experienced technologists from the University's Department of Radiology.



# NOTABLES

**Sarah C.R. Elgin**, Ph.D., professor of biology, was an invited speaker at the Lilly-UCLA symposium, "Transcriptional Control of Cell Growth," held at Keystone, Calif. She also recently presented the prestigious Lilly Lecture in Biochemistry at Michigan State University. In May she will take part in a workshop on heterochromatin in Bari, Italy, and at the end of the summer she will participate in a symposium on "Chromatin Structure and Gene Expression" in Madrid, Spain.

**Jules B. Gerard**, J.D., professor of law, has been appointed to the Missouri Advisory Committee to the U.S. Commission on Civil Rights.

**Jane Smith**, assistant dean of University College, has been awarded a six-week Fulbright Grant to study "The Arab Identity" — a comparison of Egypt and Jordan. It includes a study of Egypt and Jordan in the face of political, economic and social unity and diversity addressed from a modern, socioeconomic perspective. Smith will study this summer in Cairo and will travel to Luxor, Valley of Kings, and through Sinai to Jordan. She also will concentrate her efforts on the work environment of both countries.

**Michel M. Ter-Pogossian**, Ph.D., professor of radiation sciences in radiology and head of the Division of Radiation Sciences at the Mallinckrodt Institute of Radiology, has been named the Amy Bowles Lawrence Distinguished Scientist in Research Medicine by the Donner Laboratory. Ter-Pogossian was honored for his pioneering role in developing the use of cyclotron-produced radio-nuclides in biomedical research. The Donner Laboratory is a division of biology and medicine of the Lawrence Berkeley Laboratory at the University of California, Berkeley.

## Have you done something noteworthy?

Have you: Presented a paper? Won an award? Been named to a committee or elected an officer of a professional organization? The Washington University Record will help spread the good news. Contributions regarding faculty and staff scholarly or professional activities are gladly accepted and encouraged. Send a brief note with your full name, highest-earned degree, current title and department along with a description of your noteworthy activity to Notables, Campus Box 1070, or by electronic mail to p72245SS at WUVMC. Please include a phone number.

# RECORD

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**Cleanup crew:** Transforming a litter-strewn vacant lot into a neighborhood garden spot was the aim of John M. Olin School of Business students who volunteered a recent Saturday to help with a "Community Garden Cleanup." First-year M.B.A. students (from left) Mary McGill, David Hart, Nancy Vickroy and Amy Stabenow were among the Olin students who worked side-by-side with residents and other volunteers to pick up trash, pull weeds, haul soil and eventually plant the seeds for a vegetable and flower garden behind Ascension Episcopal Church, 850 Goodfellow Blvd. The program, sponsored by Earth Day 1990 St. Louis, the Missouri Public Interest Research Group and the Gateway to Gardening Association, provides residents of low-income neighborhoods a place to grow their own food. Olin took part in the program through its Voluntary Action Council, a student organization that encourages community service among business school students.

## Going home — continued from p. 2

pack all their belongings in boxes or trunks.

Additionally, Jaffe says his company's prices are based solely on the size of the items, rather than the customary weight and destination, which make other delivery service rates higher. "Basically we set our prices according to our costs. Our motive is to serve the students rather than build profits. We're just a student organization working for students."

In an effort to thank the students for their patronage, University Trucking has donated funds to Residential Life that provided a videocassette recorder for residents living in Shepley Hall. "Because the students showed faith in us, we wanted to do something for them," says Jaffe.

Throughout the process of running the company, the owners have developed a high level of business acumen and, in the process, also learned more about themselves. Jaffe became a partner in University Trucking as a freshman, during a time, by his own admission, he was "unsure about everything." But "running your own business builds character and self-confidence because you are taking care of other people. From placing advertising in Student Life, to coordinating moving schedules, I've learned how to make everyone happy."

He also has developed a knack of answering questions about the University from parents. Each June the partners mail letters to parents of freshmen. The letters explain the business' operations and welcome the families to Washington.

"The parents call and ask me 50 questions about school, such as what type of carpeting should they buy for their children's room; how many times have I stayed up all night studying for a test; and what is it like running my own business," notes Jaffe. "In many

ways, I feel like part of an orientation committee, but I don't mind. It's fun to talk to parents."

Jaffe's flexibility will be needed in May when, along with two new employees, he will haul students' possessions across the East Coast

without assistance from his three partners, who are all studying abroad this semester. He's ready for the challenge. "This will be my fifth run," he says. "I'm a professional. There's no doubt I can do it."

*Carolyn Sanford*

## Other movers and shakers

University Trucking is one of two student-operated transporting companies on campus. The other one is East Coast Express, which is owned and operated by Andy Caplan, a junior in the business school; Chuck Cohen, a junior in political science and business; Adam Pogach, a junior in political science; and Pete Sandler, a senior in economics. They all hail from the East Coast as well and are Zeta Beta Tau fraternity brothers.

Incorporated in the state of New Jersey, East Coast Express services 11 stops that include New

York City, Scarsdale, N.Y., Livingston and Paramus, N.J., and Philadelphia. The company's first operating season was spring 1989.

Tony Nowak, who works with both companies in his position as director of Residential Life, says, "I really respect what the two companies do. The marvelous service they provide exceeds that of any other commercial company because they're more convenient and economical." His department allows the companies to store their trucks on the South-40.

## NEWSMAKERS

Washington University faculty and staff make news around the globe. Following is a digest of media coverage they have received during recent weeks for their scholarly activities, research and general expertise.

**Phenobarbital, a drug that is prescribed for thousands of children** to prevent convulsions, is ineffective and may be harmful, researchers have recently discovered. W. Edwin Dodson, M.D., professor of pediatrics and an Epilepsy Foundation of America (EFA) member, says, "Sudden withdrawal of anticonvulsant drugs can trigger seizures, including seizures that are harder than usual, are harder

to control, or which occur in series." This story appeared in the Feb. 8 *New York Times* and in 25 other major newspapers across the country.

**Ninety percent of Vietnam veterans gave up using drugs** after coming home, according to research by Lee N. Robins, Ph.D., professor of psychiatry and sociology. The Feb. 19 issue of *Newsweek* used her findings as part of an article about drug addiction among young Americans and how authorities hype the concept of instant addiction. Robins' findings also are part of articles that appeared in the *Indianapolis Star*, *Commentary Magazine* and the *National Review*.



# MEDICAL RECORD

## Equilibrium problems prevalent as people age

The apparently simple accident of falling down — you trip; you fall — is being revealed as the complicated and serious problem it actually is by researchers at the School of Medicine. Not only do elements of the human balance system degrade with age, but with them goes the brain's ability to compensate for those changes, says balance expert Gary D. Paige, M.D., Ph.D. Together, the decreases in capacity help explain why people fall more frequently as they age.

Paige's data indicate that a decline in the performance of the body's "guidance system," as he calls it, is universal. "Falling is a function of two factors: the propensity to fall and the opportunity to fall," he says. "Everybody seems to develop a degeneration of the balance system that leads to an increased propensity."

"Falling is a serious public health problem, especially in those aged 65 and older, when it gains epidemic proportions," according to Paige. Studies show that among the elderly, 25 to 50 percent experience a fall during the course of a year. Fully one quarter of all hospital admissions of patients aged 65 and older are directly attributable to falling, and more than 200,000 hip fractures result from falls each year in this country alone.

In his most recent research, Paige and his team investigated the vestibulo-ocular reflex, or VOR, a primitive and robust reflex that keeps the eyes positioned on visual targets. That reflex, a critical component of balance and orientation in space, most likely evolved as a survival mecha-

entirely transparent to our consciousness.

To witness it at work, try this test: extend a finger at arm's length and quickly move your head back and forth while watching the stationary fingertip. The image will be maintained without blurring by a healthy VOR. Waving that finger rapidly back and forth while trying to follow it with eye movement alone and the head stationary will result in visual blur.

If the VOR were to be diminished or lost, a simple glance down at a curb and back up into the path of travel might upset the balance system. For such a person, falling would become commonplace. That, Paige's research suggests, is what happens with age. Further, the brain's adaptive plastic capabilities, which back up the system to "turn up the volume" when deficiencies occur, also apparently lose effectiveness as years go by.

### Experimental evidence

To test for a declining VOR and the brain's ability to compensate, Paige studied 60 normal subjects, aged 18 to 89, challenging their balance systems in experiments that come closer to recreating real-world circumstances than any previously done. He designed a series of tests using a rotatory chair that moves at precise speeds and distances, a special contact lens, and two-power binocular glasses. Results, presented at the 19th Annual Meeting of the Society for Neuroscience in 1989, show that older subjects — those 65 and above — do not maintain gaze as well as their younger counterparts and that their ability to adapt to that loss is deficient beyond age 65.

Subjects first were checked for normal vision, hearing and vestibular function. Their balance systems were evaluated on a machine that recorded postural adjustments when the surface on which they stood moved sharply or undulated beneath their feet. Qualified subjects then were seated in the rotatory chair, a computer-driven device that moves precisely through arcs with speeds as great as 300 degrees per second and, when traveling at smaller velocities, can reverse direction as often as eight times per second. Their heads were fixed in place firmly but comfortably so that the only motion possible was that imparted by the chair.

Paige placed a contact lens, consisting of a ring of soft plastic which houses a coil of copper wire about the size of a human hair, into a subject's anesthetized eye. A large hole in the middle of the lens facilitated clear vision, and subjects were instructed to focus on images projected onto a screen surrounding them. A second coil was placed on their foreheads. When an electromagnetic field was generated around the head of the subject, any motion of eye or head created a small, discrete electrical current in the coil, allowing precise detection of its position and, therefore, the corresponding position of the eye.

### Movements quantified

Using computer algorithms written in the lab, Paige was able to relate head movement to the right, for example, with eye movement to the left, thereby measuring with extreme accuracy the subject's VOR. By placing the value for the response (eye movement) over the value for



With his head clamped securely in the rotatory chair, balance expert Gary D. Paige, M.D., Ph.D., adjusts a pair of two-power binocular glasses in a demonstration of devices used in his studies.

the stimulus, (head movement), Paige arrived at a mathematical representation of the subject's VOR performance. That value he called "gain." An equally important value, called "phase," quantified synchrony of eye and head movement.

Older subjects, those 65 and above, displayed smaller gains and poorer synchrony. The differences were not apparent at lower head velocities, but as the circumstances began to approach real-world conditions, "like looking left and right before crossing the street," Paige says, older subjects' gains dropped and synchrony declined in direct relationship to age. Younger patients' stayed nearly constant. Paige's rotatory chair, along with the computer programs that drive it, make up one of the world's only facilities capable of so closely replicating lifelike conditions in the laboratory.

### Creating 'mixed signals'

To assess the brain's ability to correct for changes in the vestibular system, Paige went on to challenge his subjects' adaptive plastic mechanisms. He asked his subjects to wear two-power glasses for eight hours, after which they were evaluated in the rotatory chair a second time.

"When you put on the binocular glasses, suddenly your brain starts to get mixed signals," he explains. "When your head moves one unit to the left, vestibular organs in the ear send that information to the brain. But your eyes send information that says you have moved two units left. When the head turns, the visual world appears to shift and blur. The brain detects the mismatch and adjusts the VOR by employing mechanisms to boost its performance."

Paige did not expect subjects to have completely adjusted by the end of eight hours, but "after wearing the glasses, they show measurable adaptation, and I can place them on the curve. By the end of the day, their brains are recalibrating so that the reflex behaves more closely in accordance with its goal," he says.

Perfect adaptation would be expressed by a gain of 2, or 100 percent. Paige says the system of plastic adaptation is capable, given enough time to adjust, of reaching about 1.7. Although the VOR is a true reflex, its performance is modified by experience. Current thinking is that

we are born with an arbitrary value and that our experiences with visual and vestibular interaction fine-tune the system.

Again, results showed the relative capability of the brain's adaptive plastic mechanism to be clearly related to age. In one protocol, subjects younger than 50 displayed an average increase in VOR gain of 45 percent after a day adapting to the glasses. Older subjects managed a maximum increase of only 30 percent. And when the chair moved at four cycles per second — the rapid oscillation that duplicates glancing back and forth — older subjects did even worse: Younger people still managed an adaptive increase of 22 percent; their more senior counterparts displayed only a two percent change.

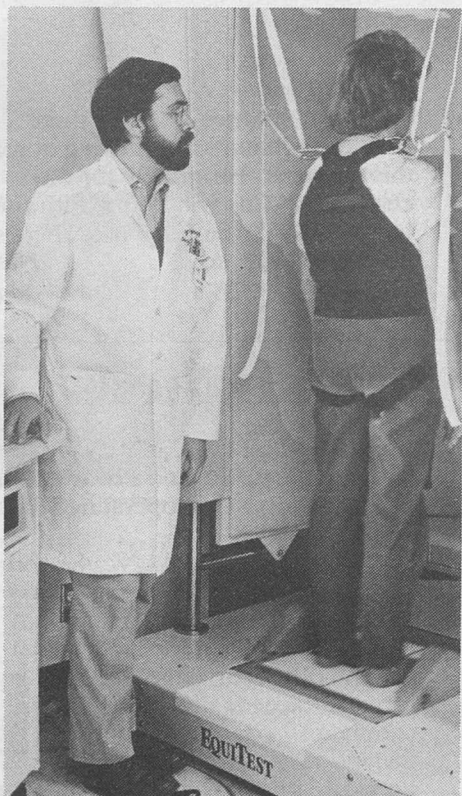
Says Robert Baloh, professor of neurology at the UCLA Medical School, "This work gets at the specific pathophysiology of falling. Earlier studies focused mostly on environmental aspects, but Paige, by exploring the source and its relation to the visual and vestibular systems, suggests that we may be able to develop appropriate treatments for falling. And that's a very important clinical problem."

Using his system, Paige is capable of identifying those with premature VOR degeneration, as well as people who are likely to overcome the changes caused by aging and those who are not. He is now exploring the value of using the glasses as a tool for quantifying clinical patients' adaptive capabilities.

When tumors interfere with nerve function from the ear, balance can be seriously impaired. Sometimes, the appropriate surgery requires cutting the nerve. In those cases, patients must learn to adapt to a vestibular system that is one-sided. Paige believes previous experience with the two-power glasses may prepare patients for coping with that change.

Paige thinks of balance as a true "sixth sense." He says, "you can take stock of it; you know when you're tipped or moving, even in the dark. But unlike the other senses, you can't shut off the system. And because it is continuous, it is not usually obvious." Not until it begins to degrade with age and every step becomes uncertain.

Steve Kohler



Paige with a patient on the movable platform that challenges balance and records responses.

nism to allow the head and body to move erratically while keeping a visual image steady on the retina, Paige says.

Coordinating information from the eyes and the vestibular organs located in the inner ear, the VOR directs the eyes to move a distance and direction equal and opposite to head movement, Paige explains. If the head moves unexpectedly to the right, the eyes move automatically to the left, maintaining a stable visual image. The VOR is sensitive enough to accommodate head movements as small as those imparted by a heartbeat. Yet in normal circumstances, it is



## First U.S. case

# Rare fungus causes sinus infection

Physicians at the School of Medicine have reported the first case in the United States of a sinus infection caused by a fungus rarely seen in humans.

The unusual case was presented recently during a poster session at the American Academy of Allergy and Immunology's annual meeting in Baltimore.

The infection, Sinus Zygomycosis, is a chronic inflammation of the sinuses caused by a fungus called *Conidiobolus incongruus*. Although it has been found in horses, the fungus has been reported only twice before in humans. The Washington University research team is attributing the infection to a rare immunologic defect that compromises cellular immunity.

"This fungus has only been found three times in humans, and this is the first time it's been reported in the United States," says allergist Philip Korenblat, M.D., who presented the team's findings. "When we looked for reasons for the infection, we found a very peculiar immunologic defect that's just now being looked at in other illnesses."

The fungus was discovered in a 20-year-old Caucasian male who had a history of allergies and chronic inflammatory sinus problems. A culture obtained when he underwent endoscopic nasal surgery revealed that the infection was caused by *C. incongruus*.

Because the organism is extremely unusual, the researchers conducted an immunologic evaluation

and determined that the patient had a partial T-cell immunodeficiency. Although the total number of T-cells was within normal ranges, he had a deficiency of CD4+ T-cells, sometimes called helper/inducer T-cells. What's more, he had a significant increase in the percentage of T-cells carrying the gamma/delta T-cell receptor — normally seen in the developing immune system — and a decrease in the percentage of T-cells carrying the alpha/beta T-cell receptor, normally seen in more than 75 percent of total T-cells in the mature immune system.

The patient was operated upon and placed on ketoconazole, an anti-fungal medication. He later received repeat endoscopic sinus surgery because the disease recurred, and is now off ketoconazole and doing well with no sign of *C. incongruus* or any other infecting organisms. School of Medicine researchers are continuing to study and define the immunologic defect, which a recent New England Journal article linked to ataxia telangiectasia, an immunodeficiency syndrome associated with progressive neurologic changes and both T-cell and B-cell defects.

In addition to Korenblat, the research team includes M. Camp and George Kobayashi, Ph.D., Department of Microbiology; Stanley Thawley, M.D., Department of Otolaryngology; William Campbell, M.D., Department of Infectious Diseases; and Stephen Polmar, M.D., Ph.D., Department of Allergy and Immunology.

## Kornfelds' work receives MERIT award

Stuart A. Kornfeld, M.D., and Rosalind Kornfeld, Ph.D., professors of medicine and biochemistry at the School of Medicine, have received MERIT status from the National Institutes of Health (NIH) for their latest grant.

The five-year grant from the National Cancer Institute, part of the NIH, totals \$1,715,912. The funding will enable the Kornfelds to continue research on the biochemistry of glycoproteins. MERIT (Method to Extend Research in Time) status guarantees the Kornfelds uninterrupted financial support without the time-consuming paper work and other delays traditionally associated with grant renewal applications.

Researchers cannot apply for MERIT status, but are chosen in recognition of their consistent commitment to excellence based on previous research. Once received, a five-year grant with MERIT status may be extended an additional three to five years, based on an expedited review of work accomplished during the initial period.

"Work in the Kornfeld laboratory has led to a much greater understanding of certain rare disorders called lysosomal storage diseases," said Chancellor William H. Danforth. "This research ultimately could lead to the development of new therapies to treat these diseases, which can be crippling and even lethal. We are pleased that NIH has recognized their outstanding efforts with this honor."

The Kornfelds have helped to explain how glycoproteins, molecules with sugar and protein components, are synthesized by cells. In particular,

they have elucidated the complex machinery used by cells to form the carbohydrate units of glycoproteins. These carbohydrates are of interest because they serve as recognition molecules that target proteins to particular locations in the cell, such as the lysosome, the cell's "garbage disposal."

The Kornfelds have shown that a deficiency of one of the carbohydrate biosynthesis enzymes leads to the breakdown in the targeting of specific proteins (lysosomal enzymes) to lysosomes. This, in turn, causes accumulation of undigested "garbage" in the cell.

The information on protein targeting and the role of the lysosome may be used in the future to develop new therapies for detecting and treating a family of metabolic disorders that are rare but very serious.

A 1962 graduate of Washington University School of Medicine, Stuart

Kornfeld served his internship and residency at Barnes Hospital. He has been on the School of Medicine faculty and the staff at Barnes Hospital since 1966. Co-director of the School of Medicine's hematology-oncology division, he was elected into the National Academy of Sciences in 1982 and to the American Academy of Arts and Sciences in 1988.



Rosalind Kornfeld

Rosalind Kornfeld received her doctorate in biochemistry in 1961 from the School of Medicine and has been on the faculty since 1969. She is a member of the American Society of Biological Chemists and the American Society of Hematology.



Occupational therapist Linda Hunt tosses a beach ball to a participant in the Memory and Aging Exercise Program.

## Exercise class helps Alzheimer's patients physically and mentally

In striving to meet the needs of Alzheimer's patients and their families, the School of Medicine's Program in Occupational Therapy offers an exercise program for people with mild dementia.

The class, called the Memory and Aging Exercise Program, is currently accepting new participants.

According to occupational therapist Linda Hunt, who developed the classes, those with mild senile dementia are unable to appropriately interact in a normal exercise group, yet are unsuitable for adult day-care centers which serve a more impaired population.

"The initial stages of dementia are very stressful and frightening for the patients and their families," says Hunt. "We offer this program to keep the minds and bodies of Alzheimer's patients active and to give their families a break from caregiving."

Participants take part in therapeutic exercises and activities designed to be fun while promoting endurance, flexibility and coordination as well as reducing agitation and the day sleep that often occurs as many of these patients become less active. The group activities also encourage participants to socialize with each other and work toward goals "even though they may only remember it for a moment," Hunt says.

Hunt developed the program in response to the state's call for proposals on how to provide families with

some sort of respite. She felt caregivers would be more comfortable with the program if the impaired person would also benefit.

Caregivers may stay and exercise with the impaired person or take the time to run errands or have time to themselves. At the end of each class, they are informed about what the class did and how the participant responded.

In a recent evaluation of the program, caregivers were generous with praise. One husband wrote of his wife, "I feel good knowing that she is active and participating in uplifting exercises and conversation instead of sitting at home with no exercise and mind stimulation."

A wife commented, "I love seeing him so happy. He loves the group and feels they help each other. Working keeps me away from him a lot, and I feel relieved at knowing he is with people who care about him."

Another summed up the program by saying, "So far I have a couple hours of relief two times a week."

As the program progresses, Hunt continually tries new techniques to keep the classes entertaining. Her latest, which was a big hit with participants, was having a music therapist conduct part of a session.

Classes meet Tuesdays and Thursdays from 9 a.m. to noon at Delmar Gardens of Creve Coeur, 850 Country Manor Lane. Cost is \$10 per class. For information, call Hunt at 362-2291.

## Asbestos expert to deliver Sutter lecture

A world-renowned expert on asbestos and asbestos disease will deliver the ninth Richard A. and Betty H. Sutter Visiting Professor Lecture in Occupational and Industrial Medicine, Thursday, May 3, at the School of Medicine.

Irving J. Selikoff, M.D., professor emeritus at Mount Sinai School of Medicine, will present his 9:30 a.m. lecture "Preventing Asbestos Disease," in Clopton Amphitheater, 4950 Audubon, on the ground floor of Wohl Clinic.

Selikoff, who is also professor emeritus of community medicine at Mount Sinai, is renowned for his expertise in environmental research and public health concerns. He has received numerous honors and awards for his work and has served in various editorial capacities for such journals as Environmental Research,

American Journal of Industrial Medicine and Preventive Medicine and Public Health. He is frequently called upon by both national and international health agencies as an expert consultant.

He has been on the faculty at Mount Sinai since 1968 and before that directed the Environmental Sciences Laboratory there.

St. Louis physician Richard A. Sutter, M.D., and his wife, Betty, established the visiting professorship in 1985 to expand the understanding and practice of occupational medicine. Occupational medicine deals with conditions in the workplace and their effects on employee health, preventive medicine for workers, safety factors, and emergency and definitive surgical care and rehabilitation of the industrially ill and injured.



# MEDICAL RECORD

## Investigator award will be presented to Jeffrey Gordon

Jeffrey I. Gordon, M.D., a physician and biochemist at the School of Medicine, has been selected to receive the 1990 Young Investigator Award from the American Federation for Clinical Research (AFCR).

The award, which includes a \$20,000 prize, will be presented at the organization's national meeting May 4-7 in Washington, D.C. In addition Gordon, a professor of medicine and of biochemistry and molecular biophysics, will present his work at the AFCR plenary session.

For the last eight years he has studied a family of lipid-binding proteins and their genes, using a variety of methods. His lab was the first to use transgenic, or genetically engineered, mice to study how the genes which produce these proteins are expressed in different intestinal cells and in different regions of the intestine.

These experiments have shed light on the mechanisms which allow the intestine to acquire different functions in its different parts and how intestinal cells differentiate. Using one of these intestinal intracellular lipid-binding proteins as a model, Gordon has also analyzed and defined the molecular and atomic details of how fatty acids and proteins interact.

In separate research, his team's analysis of the enzyme N-myristoyl-transferase led to the development of a new class of compounds that has inhibited replication of the AIDS virus in cultured human white blood cells. The new compounds resemble myristic acid, a rare, naturally occurring fatty acid that apparently must be present in order for some viruses, including the AIDS virus, to replicate.

The enzyme N-myristoyltransferase links myristic acid to specific viral and cellular proteins (including cancer causing proteins or oncoproteins). Scientists in Gordon's lab have synthesized new compounds that are structurally similar to myristic acid, yet have different chemical and physical properties. The new compounds "fool" the enzyme N-myristoyltransferase into recognizing and then transferring them to some cellular and viral proteins.

Once transferred, these compounds can block the normal function of a myristoylated protein. In the case of certain retroviruses like the AIDS virus, replication is blocked without accompanying cellular toxicity. These compounds may also be useful for treating other infectious agents and may affect other pathologic states (e.g. cancer).

The Young Investigator Award also recognizes Gordon for his accomplishments as a teacher. For the past several years he has attracted a large number of M.D., Ph.D. students to his lab. He is coursemaster for an introductory molecular biology course given to all freshmen medical students and director of a novel post-graduate M.D.-Ph.D. program developed at Washington University that is designed to help young physician/scientists better integrate their clinical and research training.

Research in Gordon's laboratory is supported by The National Institutes of Health and by Monsanto through the Washington University/Monsanto Joint Research Agreement.



Jeffrey I. Gordon

## Seniors pump up for muscle mass study

Jim Russell and Clarence Tunnichliff are slowing the hands of time.

The two men spend at least four days every week at the School of Medicine working to minimize the down side of aging by exercising and strengthening muscles that inevitably shrink and weaken as you grow older.

In just 14 weeks, Russell, 67, lost 15 pounds of body fat and gained 18 pounds of lean tissue. His skin folds, another measurement of body fat, also decreased 27 percent. Tunnichliff, 65, has also had positive physical results and says he feels better just knowing he's doing something for his health.

The men are participants in a research project at the School of Medicine that prescribes weight-lifting exercise for individuals 65 years and older. Using guided motion machines to minimize injury, participants exercise all major muscle groups. It is hoped results of the project will shed light on interventions (exercise and hormone treatment) that may slow the age-related decline in muscle mass.

Kevin Yarasheski, Ph.D., research instructor in medicine, is conducting the project and says its purpose is to demonstrate that elderly men can adapt to weight-training exercise by increasing their muscle mass, and as a result, gain muscular strength that can be used to assist them in performing routine tasks that may have become difficult with age. A secondary purpose, done in collaboration with Dennis Bier, M.D., director of endocrinology and metabolism, is to determine how the muscles of elderly individuals grow by using recently developed isotope tracer methodologies.

Yarasheski currently is looking for volunteers age 65 and over to participate in the ongoing project, which is being funded with an award from the National Institute of Aging, an agency of the National Institutes of Health. The five-year grant is for \$290,000. To carry out the project, 100 volunteers will be needed over the next five years.

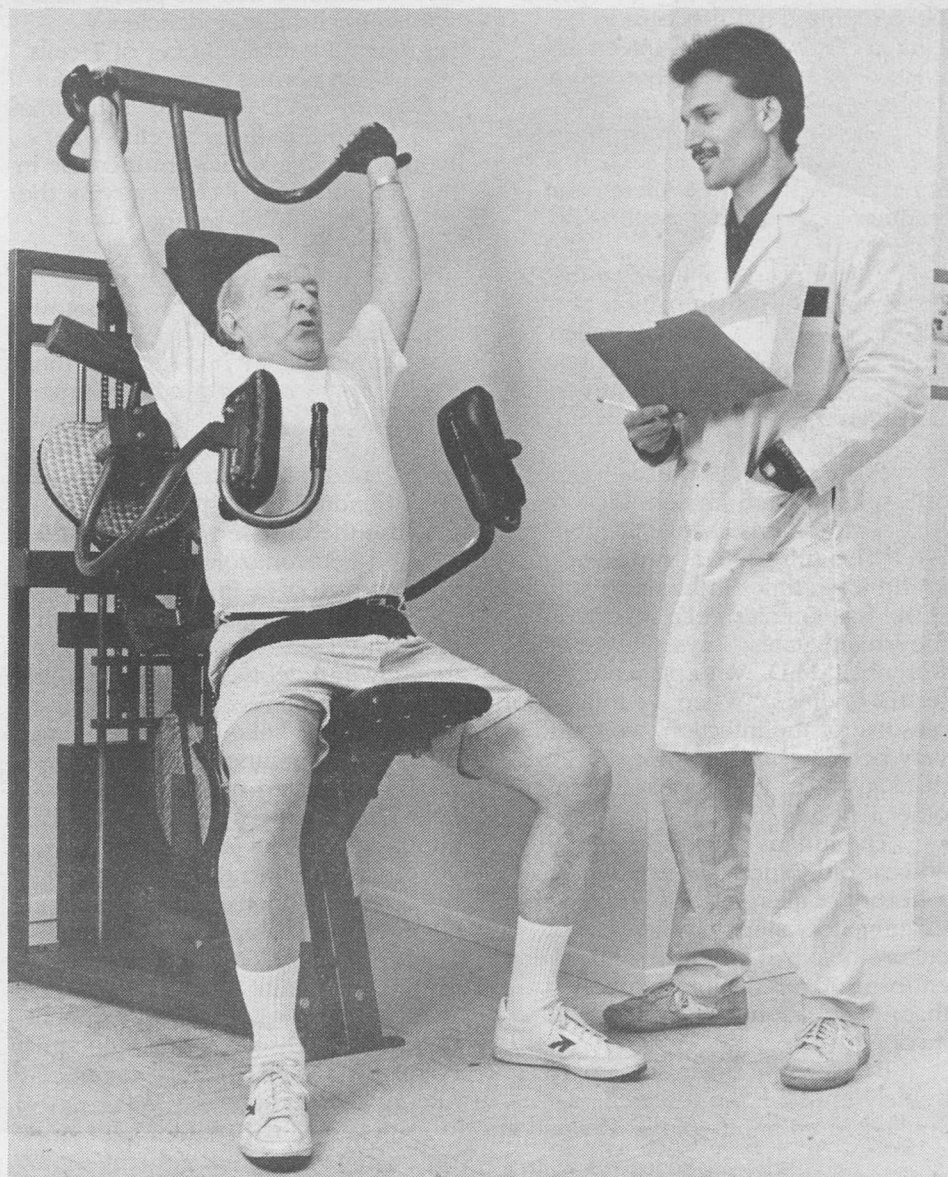
The research is part of a larger exercise and aging project at the School of Medicine, under the direction of John Holloszy, M.D., director of the applied physiology section in the Department of Medicine, examining the effects of exercise training on the cardiovascular system, obesity and blood sugar.

As the results of these studies become available, Yarasheski says several observations are clear: elderly adults who maintain ideal body weight, eat properly and keep physically active and fit are likely to appear biologically "younger" than their less fitness-conscious counterparts.

"Exercise is good for an aging population and beneficial for people who may be losing muscle mass and function," he says. "We're finding that contrary to popular perception, there are benefits of weight-lifting for the elderly. And we're studying the possible benefits of treating elderly people with growth hormone and whether it will increase muscle mass and bone mass."

Among people over age 75, more than 32 percent are unable to climb stairs, 40 percent are unable to walk two blocks and 22 percent cannot lift 10 pounds, reports the National Institute on Aging. Studies here, and those done at other aging research centers, have shown that some of the biological characteristics of aging can be reversed and that the rate at which the body physiologically declines is very much determined by factors such as diet and exercise.

Although volunteers in the



Kevin Yarasheski, Ph.D., monitors Clarence Tunnichliff's workout.

current study aren't preoccupied with achieving a youthful appearance, they are interested in maintaining and improving their present state of health. One 71-year-old participant, Charlie Odorizzi, has significantly lowered his cholesterol level since joining the program March 16. In addition to the exercise, Odorizzi attributes his success to the 10-day diet he was instructed to go on when he began the program.

Tunnichliff, who has never before adhered to an exercise regimen, says it's rewarding to know his body is getting stronger the longer he exercises.

"Never in my life have I exercised like this before," Tunnichliff says. "People need to stay active and exercise. I think it does something for you psychologically. You have something to come to and do and you progress."

Tony Mansor, a 67-year-old participant, says he finds the workout rejuvenating. "It re-energizes you. I don't want to go to bed at night after I exercise so I accomplish much more."

The weight training experiment at the School of Medicine has also confirmed that elderly individuals are deficient in a hormone known as growth hormone. This naturally-occurring hormone is responsible for

maintaining muscle, bone and connective tissue throughout life, and Yarasheski says its decline as one ages may help explain the loss of muscle tissue in older adults. In an earlier study, when hormone replacement was combined with a weight lifting program, one volunteer gained muscle mass and strength similar to that of volunteers half his age.

Researchers have only recently been able to conduct studies gauging improvement in muscle mass and strength using growth hormone because the hormone was in limited supply. Now scientists have the capability to produce a synthetic version of the hormone, the same substance given to children with short stature, in the lab.

Researchers hope to extend their observations to include studies that examine the effects of weight lifting exercise on other age related problems such as the loss of bone density (osteoporosis), high cholesterol, increasing body fat and the diabetes that occurs as a result of increased body fat and loss of muscle mass.

Persons who live in the St. Louis area, are 65 to 75 years of age and in overall good health, are invited to call Yarasheski at 362-8194 about becoming a volunteer in the program.

Kleila Carlson

## New compulsive disorder support group

Persons suffering from obsessive compulsive disorder (OCD) and their families can now receive the support they need with the establishment of a chapter of the Obsessive Compulsive Foundation Support Group at the School of Medicine.

OCD, which affects about 5 million people in the United States, is characterized by recurrent, unwanted and unpleasant thoughts and/or repetitive ritualistic behaviors. OCD sufferers know their obsessions and compulsions are irrational or exces-

sive, yet find they have little or no control over them. Typical obsessions are with dirt, germs and contamination or an inordinate concern with order, arrangement and symmetry. Typical compulsions include excessive hand washing, cleaning, hoarding and touching.

The meetings began April 25 and will be held weekly at 7 p.m., on Wednesdays, in room 15400CC, conference room A, on the 15th floor of the Barnes Hospital East Pavilion. For more information, call 362-2459.



# PERSONNEL NEWS



**Staff Day '90:** Win/Lose or Draw was a big draw among staff members, including Susan Felps (above), director of cooperative education at the engineering school, at last year's Staff Day. In addition to Win/Lose or Draw, this year's Staff Day, which will be held Monday, May 21, will feature softball, volleyball, wallyball, a live band and a complimentary buffet luncheon for nonacademic employees. The 15th annual Chancellor's Staff Day will begin at 11 a.m. with a service awards ceremony in Edison Theatre, followed by the luncheon at noon in Bowles Plaza. Winning teams in the afternoon softball, volleyball and wallyball competitions will receive trophies, and winners in the craft show will receive plaques. Bingo and Win/Lose or Draw contestants will compete for various prizes.

## University is committed to drug-free workplace

In order to continue receiving federal grants and contracts, Washington University must certify that it conforms with federal standards for a drug-free environment. A copy of the certification form is reprinted here.

You will note that the University must:

a) Publish a policy statement and make certain that all individuals engaged in grant or contract work have a copy. The statement, which has been approved by both the Senate Council and the Executive Faculty, appears below.

b) Establish a drug-free awareness program. Information is included in the FY-89 certification.

c) Institute appropriate sanctions against individuals convicted of violating drug laws.

Individuals engaged in projects funded by federal grants and contracts must:

a) Abide by the University's policy statement; and

b) Notify the University within five days of any criminal conviction involving drugs in the workplace.

These federal rules underscore the importance of a drug-free workplace. Anyone with substance abuse problems is encouraged to seek confidential counseling through Mary L. Parker, M.D., director of University Health Services.

### Policy statement

It is the goal of Washington University to protect the public health and environment of members of the University community by promoting a drug-free environment.

In accordance with recently enacted legislation it is unlawful to manufacture, distribute, dispense, possess or use illegal drugs at Washington University.

Violations of the drug-free policy will be handled according to existing policies and procedures covering the conduct of administrators, faculty, staff and students.

Training programs are being developed to provide information about creating and maintaining a drug-free environment.

Referrals to drug counseling and

rehabilitation programs are available to the University community. Information about counseling and drug programs may be obtained as follows: Students, University Health Services, 889-6666; Hilltop Campus, Personnel Office, 126 North Brookings Hall, Box 1184, 889-5990; Medical School, Lisa

Poor, Dean's Office, Box 8106, 362-6940; or Dental School, Dr. Thomas Schiff, Box 8100, 454-0350.

Approved by Executive Faculty on 12/7/88; approved by Senate Council on 1/26/89.

## FY-89 Certification Regarding Drug-Free Workplace Requirements Grantees Other Than Individuals

This certification is required by the regulations implementing the Drug-Free Workplace Act of 1988, 34 CFR Part 85, Subpart F. The regulations, published in the January 31, 1989 Federal Register, require certification by grantees, prior to award, that they will maintain a drug-free workplace. The certification set out below is a material representation of fact upon which reliance will be placed when the agency determines to award a grant. False certification or violation of the certification shall be grounds for suspension of payments, suspension or termination of grants, or governmentwide suspension or debarment (see 34 CFR Part 85, Sections 85.615 and 85.620).

### The grantee certifies that it will provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing a drug-free awareness program to inform employees about -

- (1) The dangers of drug abuse in the workplace;
- (2) The grantee's policy of maintaining a drug-free workplace;
- (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
- (4) The penalties that may be imposed

upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will -

- (1) Abide by the terms of the statement; and
- (2) Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction;

(e) Notifying the agency within 10 days after receiving notice under subparagraph (d)(2) from an employee or otherwise actual notice of such conviction;

(f) Taking one of the following actions, within 30 days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted -

- (1) Taking appropriate personnel action against such an employee, up to and including termination; or
- (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

## Professional job searches are under way

Washington University is conducting searches to fill professional positions on the Hilltop Campus. For complete job descriptions and qualifications required for these positions, call the Personnel Office at 889-5990.

### Director of Engineering Central Services (ECS)

Responsibilities include overall operation of the ECS department that includes Publications, Copy Center, Machine Shop and General Administration. Provide technical services to maintain the physical, safety and housekeeping requirements of the engineering school buildings. Initiate and control contract services necessary to design and construct renovations within the engineering school buildings.

Qualifications: B.S. from an accredited institution or equivalent work experience in related areas.

Send resume with salary history to: Michael D. Moll, Associate Dean, Washington University, School of Engineering and Applied Science, Campus Box 1163, One Brookings Drive, St. Louis, MO 63130.

### Associate Director of Corporate and Foundation Relations and Director of Development for the Center for the Study of American Business (search extended)

Washington University seeks a skilled and experienced individual to serve a dual role. As associate director of Corporate and Foundation Relations, responsibilities will include: identifying, cultivating and soliciting corporations and foundations; providing staff support for the University's Corporate Partners program; serving as a resource to senior administrative officers; coordinating the University's project and prospect clearance process; and coordinating the proposal development process.

Responsibilities as director of development for the Center for the Study of American Business will include identifying, cultivating and soliciting individuals, corporations and foundations for annual support; and coordinating an advisory volunteer group to assist with the solicitation of major donors.

A college or university degree is required; master's preferred. Three years of experience in corporate and foundation relations or a closely related field; experience in proposal development, prospect research and/or foundation relations preferred.

Send letter of application, vita, and the names of three references to: Dr. Randy Farmer, Director of Corporate and Foundation Relations, Washington University, Campus Box 1193, One Brookings Drive, St. Louis, MO 63130.

In addition to the professional searches, qualified candidates are being sought to fill secretarial, clerical and technical positions. Information about these positions is available through the Hilltop Campus Personnel Office, Room 126, North Brookings, 889-5990, or the Medical Campus Personnel Office, 1130 Hampton Ave., 726-7500.

## Personnel News

Personnel News appears monthly in the Record and is prepared by Gloria W. White, vice chancellor for personnel and affirmative action, and other members of the Personnel Office. Personnel News is designed to keep Washington University employees and their families informed of the benefits and opportunities available at the University.



# CALENDAR

April 26-May 5

## LECTURES

**Thursday, April 26**

**2:30 p.m. Dept. of Mechanical Engineering Colloquium**, "Boundary-layer Receptivity to External Disturbances," R.W. Wlezien, McDonnell Douglas Research Laboratories. Room 100 Cupples II.

**3:30 p.m. Assembly Series Lecture** by Sergei Pegov, noted Soviet ecologist and prof. at the Institute of Policy Analysis, Moscow. Women's Bldg. Lounge. For more info., call 889-4620.

**4 p.m. Central Institute for the Deaf Seminar**, "The Digital Hearing Aid Project: Very Large Scale Integration (VLSI) Designs for Hearing Aids," Robert E. Morley, WU assoc. prof. of electrical engineering. 2nd Floor Aud., Clinics and Research Bldg., 909 S. Taylor Ave.

**4:30 p.m. Dept. of Mathematics Colloquium**, "Circle Packing, Geometry and Complex Analysis," Ken Stephenson, Dept. of Mathematics, U. of Tennessee. Room 199 Cupples I.

**Friday, April 27**

**Noon. Dept. of Cell Biology and Physiology Seminar**, "Serin-enzyme Complex Receptor," David Perlmutter, WU assoc. prof. of pediatrics. Cell Biology Library, Room 4914, South Bldg.

**Noon. Radiation Oncology Center Freund Memorial Lecture**, "Cancer Prevention and the Role of Nutrition," Ernst L. Wynder, president, American Health Foundation, New York. East Pavilion Aud., Barnes Hospital.

**4 p.m. Dept. of Mathematics Analysis Seminar**, "Thurston's Conjecture for Circle Packings in Non-hexagonal Case," Ken Stephenson, Dept. of Mathematics, U. of Tennessee. Room 199 Cupples I.

**Monday, April 30**

**4 p.m. Dept. of Biology Seminar**, "Cladistic Methods for Inferring Rates of Gene Flow," Montgomery Slatkin, Dept. of Integrative Biology, U. of Calif., Berkeley. Room 322 Rebstock Hall.

**Tuesday, May 1**

**4 p.m. Dept. of Chemistry Seminar**, "NMR Spectroscopy of MilliKelvin Temperatures," John Waugh, Dept. of Chemistry, M.I.T. Room 311 McMillen Lab.

**Wednesday, May 2**

**Noon. Dept. of Cell Biology and Physiology Seminar**, "Volume Sensitivity of K<sub>2</sub>Cl Co-transport in Sheep Red Cells," Phil Dunham, Dept. of Biology, Syracuse U. Cell Biology Library, Room 4914, South Bldg.

**4 p.m. Assembly Series Lecture** by anthropologist Robert Hinshaw. Author of *Guatemala: Harvest of Violence* and representative of Friends Committee on National Legislation and Witness for Peace. (Hinshaw was an observer of the February elections in Nicaragua.) Hurst Lounge, Duncker. For more info., call 889-4620.

**Thursday, May 3**

**9:30 a.m. School of Medicine Ninth Dr. Richard A. and Betty H. Sutter Visiting Professorship in Occupational and Industrial Medicine Lecture**, "Preventing Asbestos Disease," Irving J. Selikoff, prof. emeritus, Mount Sinai School of Medicine. Clopton Amphitheatre, 4950 Audubon Ave.

**Noon. School of Medicine 37th Annual Alpha Omega Alpha Lecture**, "Responsibilities of the Physician: A Pediatrician's Perspective," F. Sessions Cole, WU prof. of pediatrics and assoc. prof. of cell biology and physiology. Clopton Amphitheatre, 4950 Audubon Ave.

**Noon. Dept. of Genetics Seminar**, "The Search for Genes That Control Early Mammalian Embryogenesis," Gail Martin, Dept. of Anatomy, U. of Calif., San Francisco. Room 816 McDonnell Medical Sciences Bldg.

**4 p.m. Central Institute for the Deaf Seminar**, "Sound-to-Tactile Aids for the Deaf: Laboratory Studies," Janet M. Weisenberger, Central Institute for the Deaf. 2nd Floor Aud., Clinics and Research Bldg., 909 S. Taylor Ave.

**4:30 p.m. Dept. of Mathematics Colloquium**, "Explicit Solutions of Some Partial Differential Equations," Lee Rubel, Dept. of Mathematics, U. of Illinois, Urbana-Champaign. Room 199 Cupples I.

**Friday, May 4**

**11 a.m. Dept. of Mathematics Analysis Seminar**, "Moduli Space for Domains in C," Lee Rubel, Dept. of Mathematics, U. of Illinois, Urbana-Champaign. Room 199 Cupples I.

**2 p.m. Dept. of Chemical Engineering Seminar**, "Transient Global Heat Transfer Model for CZ Crystal Growth" and "Thermal History Analysis of Crystal by the Transient Global Heat Transfer Model for CZ Crystal Growth," Shunji Miyahara, Advanced Research Laboratories Ltd., Sumitomo Metal Ltd., Amagasaki, Japan. Room 208 Urbauer.

**6 and 8:30 p.m. Washington University Association Travel Lecture Series**, "Sri Lanka — Mystic Isle of Ceylon," George Lange, fellow,



**Playwriting contest winner:** A scheme to kill Penelope's father, Olan (Foster Solomon), and collect on his life insurance begins to go awry in Rick Watson's A.E. Hotchner prize-winning play, "Had Momma Left a Lullaby ... ." The farmhand Hemi (Tom Jaeger) and insurance salesman Lester (Wilson Bell) struggle over who will do the deed and receive Penelope's (Liana Asim) affections. The new play will be performed at 8 p.m. April 26, 27 and 28 in the Drama Studio, Room 208 Mallinckrodt Center. Tickets are \$3 for the general public and \$2 for senior citizens, students and faculty and staff. For more information, call 889-6543.

Explorer's Club. Graham Chapel. For ticket info., call 889-5122.

**Saturday, May 5**

**9 a.m.-5 p.m. Dept. of Chemistry Symposium on the Frontiers of Organic Chemistry**, "Host-Guest Chemical Recognition." May Aud., Simon Hall. For ticket info., call 889-6530.

## PERFORMANCES

**Thursday, April 26**

**8 p.m. Performing Arts Dept. Presents "Had Momma Left a Lullaby..."**, a play by Rick Watson, winner of WU's A.E. Hotchner Playwriting Festival Award. (Also April 27 and 28, same time.) Mallinckrodt Center Drama Studio, Room 208. Cost: \$3 for general public; \$2 for senior citizens, students, and WU faculty and staff. For more info., call 889-6543.

**Friday, April 27**

**8 p.m. Edison Theatre "OVATIONS!" Series Presents Dancer Susan Marshall & Company.** (Also Sat., April 28, same time, and Sun., April 29, at 2 p.m.) Edison Theatre. Cost: \$16 for general public; \$12 for senior citizens and WU faculty and staff; and \$8 for students. For more info., call 889-6543.

**Friday, May 4**

**8 p.m. Performing Arts Dept. Presents St. Louis Dancers' Final St. Louis Performance**, to be given in honor of Annelise Mertz, company founder and artistic director and WU prof. emeritus of dance. (Also May 5, same time.) Edison Theatre. Cost: \$12 for general public; \$9 for senior citizens and WU faculty and staff; and \$6 for students. For more info., call 889-6543.

## MUSIC

**Thursday, April 26**

**8 p.m. Dept. of Music Presents a Concert by the WU Collegium Musicum**, directed by Bruce Carvell. Graham Chapel.

**Friday, April 27**

**2-5 p.m. Dept. of Music Hosts The American Heinrich Schutz Society Conference**, "Cross-Currents Between Italian and German Music in the 17th Century." (Also Sat., April 28, from 9 a.m.-5 p.m.) Brown Hall Lounge. For more info., call 889-5574.

**8:30 p.m. Dept. of Music Presents a Concert of German and Italian Music of the 17th Century.** The concert will feature the U. of Illinois Chamber Choir, Chester Alves, conductor, and the WU Chamber Choir, Janet Krupnik, conductor. Our Lady of Lourdes Catholic Church, 7148 Forsyth Blvd. For more info., call 889-5574.

**Saturday, April 28**

**7:30 p.m. Dept. of Music Presents a Concert of Indian Music**, featuring S. Shashidhar on flute and Nagaratna Shashidhar on venna, both professors at Bangalore College, India. Tickets go on sale at 6:30 p.m. Cost: \$15 for general public, and \$7.50 for students, Channel 9 membership card holders, and WU faculty and staff. May Aud., Simon Hall.

**8 p.m. Dept. of Music Presents a Concert by the WU Chamber Choir**, directed by Janet Krupnik. Graham Chapel.

**Sunday, April 29**

**8 p.m. Dept. of Music Presents a Concert of 17th-century Music for Voice, Harpsichord and Organ**, featuring soprano Christine Armistead and Carl Smith on harpsichord and organ. Trinity Presbyterian Church, 6800 Washington Ave. For more info., call 889-5574.

**Monday, April 30**

**8 p.m. Dept. of Music Presents WU's Chamber Ensembles.** Performance includes the Flute Choir, String Quartet and Cello Quartet, featuring Stephen Ellis on cello. Graham Chapel. For more info., call 889-5574.

**Tuesday, May 1**

**8 p.m. Dept. of Music Presents the WU Electronic Music Concert "May Day,"** directed by Richard O'Donnell. Rehearsal Room, Tietjens Hall. For more info., call 889-5574.

## EXHIBITIONS

**"M.F.A. II."** Exhibition of works by graduate students in the University's School of Fine Arts. Steinberg Hall Gallery of Art. Through April 29. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends.

**"Winners of the Carl Neureuther Student Book Collection Competition."** Books of the winning student collections will be on display through May 5. Olin Library, Special Collections, Level 5. 8:30 a.m.-5 p.m. weekdays.

**"Washington University Fine Arts Collection."** Collection includes European and American art from the post-World War II era, as well as ancient Greek vases. Gallery of Art, upper and lower galleries, Steinberg Hall. Through May 31. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

## FILMS

**Thursday, April 26**

**7 and 9 p.m. Filmboard Series**, "The Exterminating Angel." \$2. Brown Hall.

**Friday, April 27**

**7 and 9:30 p.m. Filmboard Series**, "Body Heat." (Also Sat., April 28, same time, and Sun., April 29, at 7 p.m.) \$2. Brown Hall.

**Midnight. Filmboard Series**, "9 1/2 Weeks." (Also Sat., April 28, same time, and Sun., April 29, at 9:30 p.m.) On Fri. and Sat., both the 9:30 p.m. and midnight films can be seen for a double feature price of \$3; both Sun. films can be seen for \$3. Brown Hall.

**Monday, April 30**

**7 and 9:30 p.m. Filmboard Series**, "You Can't Take It With You." (Also Tues., May 1, same times.) \$2. Brown Hall.

**Wednesday, May 2**

**7 and 9 p.m. Filmboard Series**, "Le Plaisir." (Also Thurs., May 3, same times.) \$2. Brown.

**Friday, May 4**

**7 and 9:30 p.m. Filmboard Series**, "Heathers." (Also Sat., May 5, same times, and Sun., May 6, at 7 p.m.) \$2. Brown Hall.

**Midnight. Filmboard Series**, "Fast Times at Ridgemont High." (Also Sat., May 5, same time, and Sun., May 6, at 9:30 p.m.) On Fri. and Sat., both the 9:30 p.m. and midnight films can be seen for a double feature price of \$3; both Sun. films can be seen for \$3. Brown Hall.

## SPORTS

**Saturday, April 28**

**10 a.m. Men's and Women's Outdoor Track.** WU Invitational. Bushyhead Track.

**1 p.m. Men's Tennis.** WU vs. DePauw U. Tao Tennis Center.

**1 p.m. Men's Baseball.** WU vs. Harris-Stowe State College. Kelly Baseball Field.

**Friday, May 4**

**3 p.m. Men's and Women's Outdoor Track.** WU Qualifying Meet. Bushyhead Track.

## MISCELLANY

**Thursday, April 26**

**5 and 8 p.m. School of Fine Arts 61st Fashion Show**, featuring work by students in the fashion design program. A reception hosted by WU's Women's Society follows 8 p.m. show. Center of Contemporary Arts, 524 Trinity Ave., University City. Cost: \$5 for the 5 p.m. show; \$8 for the 8 p.m. show. Clothes from the show and other original designs will be sold 1-7 p.m. Monday, April 30, in Room 200 Bixby Hall. For more info. or to purchase tickets, call 889-6515.

**Thursday, May 3**

**8 a.m.-3 p.m. Mallinckrodt Institute of Radiology Mammography Van for Women Over 35.** In parking lot west of Mallinckrodt Center. Cost: \$50 (will take credit card or check; no cash). Appointments must be made by May 1; walk-ins taken on first-come, first-served basis. Exam takes approximately 20 minutes. To make an appointment, call 362-7111.

**Friday, May 4**

**11:30 a.m. WU Woman's Club Annual Meeting and Spring Luncheon.** Sunset West, Clayton Center, at corner of Clayton and Kehrs Mill roads. Cost: \$12 for members and guests. To make reservations, call 721-1015 or 256-4839.

**4 p.m. George Warren Brown School of Social Work Memorial Service for William E. Gordon**, WU prof. emeritus of social work. Brown Hall Lounge. For info., call 889-6600.

## Calendar Deadline

The deadline to submit items for May 3-12 calendar of the Washington University Record is April 27. Items must be typed and state time, date, place, nature of event, sponsor and admission cost. Incomplete items will not be printed. If available, include speaker's name and identification and the title of the event; also include your name and telephone number. Send items to Andrew Cox, calendar editor, Box 1070, or by electronic mail to p72245ac at WUVMC.