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## Washington University Record, December 6, 1990

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## Oscar Arias Sanchez will give Commencement address

Oscar Arias Sanchez, the 1987 recipient of the Nobel Peace Prize and former president of Costa Rica, will be the speaker at Washington University's 130th Commencement ceremony on May 17, 1991, Chancellor William H. Danforth announced.

"I am delighted that such a distinguished world leader will deliver the Commencement address," says Danforth. "It is an honor for our graduates and the entire Washington University community."

Arias, author of the 1987 Central American peace plan and a former university professor, was presented the Nobel Peace Prize for his "outstanding contribution to the possible return of stability and peace to a region long torn by strife and civil war," according to the Norwegian Nobel Committee.

The peace plan was signed in August 1987 by Arias and the presidents of El Salvador, Guatemala, Honduras and Nicaragua. Designed to resolve conflict in the region, the plan calls for regular elections, political and press freedoms, respect for civil rights, peace talks, cease-fires, and negotiations to stop guerrilla wars. It also prohibits outside aid to rebel groups. In creating the plan, Arias "was motivated by the conviction that Central American people must stop killing each other," he said in a February 1990 interview with The Washington Post.

Arias "is largely responsible for bringing a peaceful settlement to one of the major conflicts in the Central American region — the Contra War in Nicaragua," says Richard J. Walter, Ph.D., professor of history and a specialist on Latin America. Because of the peace plan, he says, the leaders of the region devised a compromise that eventually ended the war.

Aimed mainly at Nicaragua, the

peace plan prompted the U.S. Congress to halt military aid to the Contras in February 1988. By 1990, when Arias was succeeded by conservative lawyer Rafael Calderon, the plan had spurred other Nicaraguan developments. Daniel Ortega stepped down as Nicaragua's president after his Sandinista Party, which seized power by force of arms in 1979, lost a national election. The anti-Sandinista rebels, backed by the United States, turned in their rifles to United Nations peacekeeping troops in compliance with a final peace accord.

Arias also is credited with bringing warring parties in El Salvador to the peace table and launching a tradition of regional summit meetings to defuse military tensions.

Despite the successes, the Central American peace plan has suffered setbacks. With the exception of Costa Rica, which enjoys a functioning democracy and broad civic freedoms, none of the countries has fully conformed with the provisions of the plan. The accord has not slowed the killing in El Salvador's bloody 11-year-old civil war. And in Guatemala, a quarter-century-old insurgency still exists, with occasional flashes of violence.

Walter, who directs the University's International Affairs Program, says Arias is one of the few Latin American winners of the Nobel Peace Prize. He says other winners in this category include 1980 prize-winner Adolfo Perez Esquivel, an Argentine human rights activist and Arias' associate, and Carlos Saavedra Lamas, a political leader and former law professor, who won the award in 1936. He died in 1959.

With his \$332,500 Nobel Peace Prize money, Arias has launched the Arias Foundation for Peace and Human Progress, a program of conflict resolution modeled after former President Jimmy Carter's center in Atlanta.

## Peruvian editor to discuss human rights

"Human Rights and the Press: A View From South America" will be discussed by Peruvian editor Enrique Zileri at 4:30 p.m. on Sunday, Dec. 9, in Graham Chapel.

Zileri's lecture is part of a Human Rights Day celebration organized by the University and the United Nations Association of St. Louis. During the event, Peruvian human rights activist and journalist Abilio Arroyo will be honored by the association.

William F. Woo, editor of the St. Louis Post-Dispatch, and former Senator Thomas F. Eagleton, University Professor of Public Affairs, also will speak during the celebration. Reservations for this event, which is free and open to the public, can be made by calling the U.N. Association at 721-1961.

Zileri is editor of the Peruvian weekly news magazine *Caretas*. Arroyo, a reporter for *Caretas*, is being honored for his role in exposing human rights violations by Peruvian authorities.

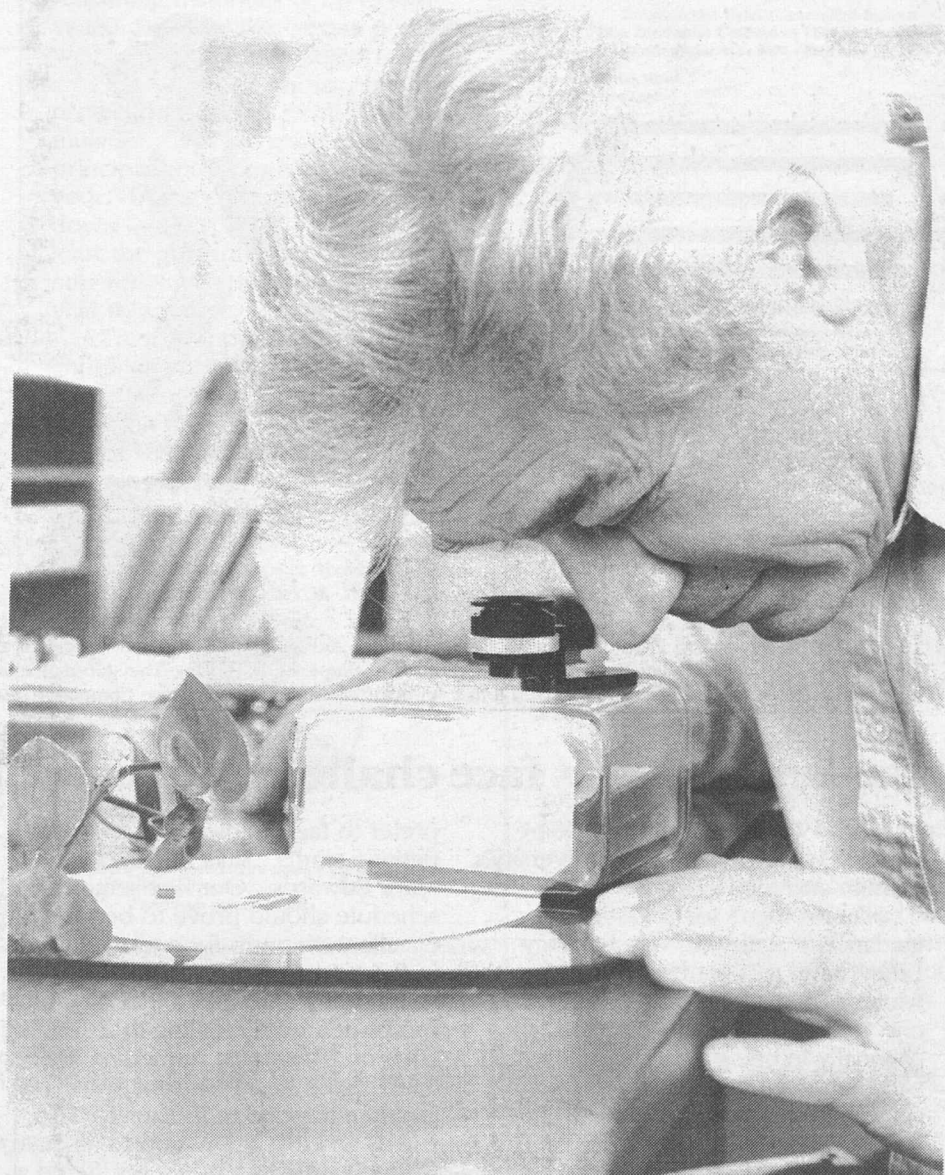
Arroyo, who has investigated human rights abuses by the army and

the Maoist guerrillas in Peru's civil war, uncovered the 1988 slaying of Hugo Bustios, a fellow reporter for *Caretas*, and the subsequent deaths of witnesses to the crime. This case is now under investigation by the Inter-American Human Rights Court, based in Costa Rica. Zileri's intervention brought the Bustios case before the court.

Arroyo's work in the region where Bustios was slain revealed that two eyewitnesses to the murder were detained and threatened by the army and a third witness recanted. After Arroyo left the region because of death threats, the fourth witness was fatally shot.

In response, the New York-based Committee to Protect Journalists petitioned the Inter-American Human Rights Commission to press the case for witness protection programs, stating that Peru had failed to investigate the deaths. The commission referred the petition to the Human Rights Court, which ordered Peru to protect the witnesses in the Bustios case.

Human Rights Day, officially Dec. 10, marks the 42nd anniversary of the U.N. adoption of the Universal Declaration of Human Rights. Following the ceremony and lecture, the consulate of Peru and The Peruvian Society will host a reception at Stix International House, 6470 Forsyth Blvd. The event, free and open to the public, is sponsored by the United Nations Association of St. Louis, the St. Louis Post-Dispatch, Paul Flum Ideas Inc. and the Assembly Series.



Joseph E. Varner, Ph.D., Rebstock Professor of Biology, uses simple tools — a clear plastic container, a flashlight, a pocket lens and nitrocellulose paper — to make a detailed print of a plant's tissue.

## 'Instant gratification' Tissue printing creates great impressions

A plant biologist at Washington University has revitalized a technique traced back to ancient times that will provide molecular biologists rapid, novel insights into the structures of plant cells and tissues.

Joseph E. Varner, Ph.D., Charles Rebstock Professor of Biology, is using a variation of a technique first published in a scientific journal more than 30 years ago. The technique has been virtually ignored since that time. Varner estimates that "tissue printing," a new twist to a method described in 1957 by R. Daoust to localize enzyme activities in animal tissue, is 10 times faster, cheaper and more efficient than traditional methods of preparing and analyzing plant samples. A precursor of the technique, Varner says, can be seen in pottery thousands of years old in the form of cereal grains embedded into clay.

Tissue printing involves pressing a freshly cut section of plant on a small piece of nitrocellulose paper to reveal in seconds a detailed print of its tissue. The paper can take a physical impression with a resolution of two microns, or two-millionths of a meter. To get a chemical impression of the sample, which reveals the characteristics of proteins, sugars and nucleic acids, Varner uses nylon paper, which is less sticky than nitrocellulose, and allows him to wash off unwanted material. The resolution in many cases yields information to the nearest cell. The biologist estimates that tissue printing nets at least 90 percent of the information that can be derived by using traditional techniques involving microscopes.

"We're reinventing the wheel," says Varner, an internationally renowned plant biologist who is a member of the National Academy of Sciences. "To get a physical print, there's no staining, no messing around; you press it and that's all

there is to it. Scientists are just now beginning to pick up on it, with at least a dozen laboratories using it in the United States. One of the nicest things about it is that it provides instant gratification. Anyone can do it. In seconds, you see something, and what you see is a serious representation of anatomy."

Molecular biologists using genetic engineering are expected to benefit greatly from the technique, which can allow them rapid access to the structure of plants and a method to monitor processes inside plant cells and tissues. Tissue printing also will be a boon to science teachers and schoolchildren because the technique will let them see nature as swiftly as a Polaroid snapshot.

Nitrocellulose paper, related to guncotton, is heavily nitrated cellulose, a substance that is the raw material of such manufactured goods as paper, rayon and cellophane. In recent years, nitrocellulose paper has been used by scientists for filters and for immobilizing proteins and nucleic acids already separated by a technique called gel electrophoresis.

Varner explained the techniques of tissue printing to an international audience of plant biologists in Cognac, France, last August. He has published several papers on the technique, the most recent, "New Ways to Look at the Architecture of Plant Cell Walls," appearing in *Plant Physiology*, 91, 1989. Varner and his colleagues now are preparing a laboratory manual of tissue printing techniques to be published by Academic Press.

Theoretically, the technology that appeals both to schoolchildren and molecular biologists goes back thousands of years. Varner notes that the earliest records of tissue prints "most likely are those of whole cereal

*Continued on p. 2*

### Inside **MEDICAL RECORD**

- The elderly's most common health problems may stem from a lesion buildup. **Page 4**
- Eleven year old is youngest cystic fibrosis patient to receive double-lung transplant. **Page 5**
- Review shows ulcerative colitis is not psychosomatic. **Page 6**





**In motion:** Junior Lori Nolan will perform "For Dancer and Tub" in the annual Washington University Dance Theatre performance at 8 p.m. Dec. 7 and 8 in Edison Theatre. The solo dance is choreographed by Susan Gash, founder and artistic director of the In Motion Dance Company.

## Basketball Bears face challenging seasons

The 1990-91 basketball seasons are under way for Washington University's women and men's teams.

The women's team, under the guidance of sixth-year coach Nancy Fahey, is off to a 5-1 beginning after winning 25 of 26 regular-season games one year ago. The Bears, ranked fifth nationally in one preseason publication, were surprised in their season-opening contest, losing to NCAA Division III upstart DePauw University, 75-73. The Bears turned the corner quickly though, defeating Principia College 112-30 before winning two important four-team tournaments.

Over the Thanksgiving holiday weekend, the Bears defended their Washington Tournament crown, knocking off Rhodes College 69-30 and Augustana College, one of last year's four NCAA regional participants, 60-54. This past weekend, the Bears continued their winning streak at the North Central College Tournament.

Washington opened the North Central tournament by defeating defending NCAA Division III champion Hope College, 61-45. In the tournament final, the Bears won their fifth straight game of the season with a 56-47 decision over the host school.

"We've rebounded well from the opening loss to DePauw," says Fahey. "We have a lot of young and inexperienced players who are making positive contributions, and that's been the difference so far this season."

Although the Bears are getting good support from the younger corps, it's been the upperclassmen — senior Karen Hermann and junior Michele Lewis — leading the way. Hermann picked up Most Valuable Player honors at both Washington and North Central tourneys. She leads the Bears in scoring with a 13.7 point per game average. Lewis is second with a 12.7 average.

The men's team, ranked 10th and 19th nationally according to respective preseason polls in Sports Illustrated and Basketball Digest, have played an ambitious schedule thus far, and the Bears' 1-4 start may not be representative of the squad's potential.

Hurt in the offseason by injuries to three key returnees, the Bears have had to make do with less depth this season. Led by the Bears' three returning starters and 1990 team captains — Jed Bergen, Robb Rickett and Scott Fiedler — Washington is trying to improve its depth situation and prepare to challenge University Athletic Association favorite Rochester when league play begins next month.

"There's no doubt the schedule we've played thus far has a lot to do with our record, but our players

prefer to face challenging and competitive teams," says Bears' coach Mark Edwards. "Our first-semester schedule should prove to be an excellent warmup for a tough season in the UAA."

The Bears dropped their first four games of the year, falling to defending Division III national runner-up DePauw 73-61 in the Bears' opener. Washington then traveled to Indiana for two games and lost at Division I Ball State University, 84-54, and then suffered a heartbreaker at Rose-Hulman Institute, losing 75-73 in the final seconds.

Washington's fourth straight defeat came at the hands of Amherst College in the first round of the Seventh Annual Lopata Classic, 64-61. It was the second year in a row the Bears have fallen in the first round after winning the first five Lopata crowns. The Red and Green rebounded in the consolation round, defeating Rhodes College 83-71 for their first victory of the season.

The women's team returns home this Saturday for a 7 p.m. game against Blackburn College. The men's squad hosts Millikin University on Dec. 13 at 7:30 p.m. in its remaining fall semester game. Both women and men's squads close out the 1990 portion of their schedule with a doubleheader Dec. 15 at Division II rival Missouri-St. Louis.

## RECORD

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## New faculty are introduced

The Record is running a weekly series profiling new faculty on the Hilltop and Medical campuses.

**Kendall J. Blumer, Ph.D.**, assistant professor of cell biology and physiology at the School of Medicine, comes to the University from the University of California at Berkeley, where he was a postdoctoral fellow in the Department of Biochemistry. He received his bachelor's degree in biochemistry from Rice University in 1977 and his doctorate in biochemistry from Duke University in 1986. His research efforts focus on defining the mechanism and regulation of signal transduction and growth control in yeast.

**Cheryl M. Coffin, M.D.**, assistant professor of pathology at the School of Medicine, comes to St. Louis from Providence, R.I., where she was an assistant professor of pathology at Brown University and associate pathologist at Rhode Island Hospital. She received her bachelor's degree, magna cum laude, in biology from Bowdoin College in 1975 and her medical degree from the University of Vermont College of Medicine in 1980. Her research interests include pediatric pathology and general surgical pathology.

**Carolyn M. Dresler, M.D.**,

assistant professor of surgery at the School of Medicine, comes to St. Louis from the University of Toronto, Ontario, Canada, where she completed residency training in thoracic and cardiac surgery. She received her bachelor's degree in chemistry with an emphasis in biochemistry from the University of Colorado in 1976 and her medical degree from the University of Colorado Health Sciences in 1980.

**Sally A. Goldman, Ph.D.**, assistant professor of computer science, comes to the University from the Massachusetts Institute of Technology (MIT), where she was a research assistant in machine learning and also served as a teaching assistant and a member of a robot-building team. Her research interests are computational learning theory, the application of techniques of theoretical computer science to problems in artificial intelligence, computational geometry and algorithms. A 1985 recipient of a National Science Foundation Graduate Fellowship, she received a bachelor's degree with honors in computer science from Brown University in 1984, and a master's degree and doctorate in electrical engineering and computer science, both from MIT, in 1987 and 1990 respectively.

## Tissue printing — *continued from p. 1*

grains fixed by firing on ancient earthenware and still clearly visible on museum pieces. It's also related to the use of Scotch tape to lift fingerprints and skin prints and to the use of cellulose acetate to make epidermal prints in plants. You could say the theory is similar to the instant camera. As simple as it is, it provides wonderful access to some sophisticated biology."

In 1987, Varner was pondering a way to localize proteins in plant sections and becoming discouraged by the amount of work it was going to require when he remembered the Daoust paper published some 30 years earlier.

"I asked Gladys Cassab, who was working with me at the time, to do some prints with nitrocellulose paper in the afternoon," Varner recalls. "The next morning she showed me the first results, and we did the rest as tissue prints. We were amazed at how fast the process went. Daoust was an animal physiologist. I don't know anything about him other than his papers, the second being published in 1965. It's astonishing so few people have tried to work with his methods."

To actually see the print, Varner uses a small flashlight and a \$95 pocket lens with 22-power magnification and a broad field of vision. He places the nitrocellulose paper on the clear hard plastic surface of a container purchased at a dime store, and shines the light beneath the surface so he can peer through the lens. These simple tools and a knapsack are all a biologist needs to get samples on a field trip.

For a chemical print, a scientist needs a little more imagination. For localizing messenger RNA — molecules that take the genetic message of DNA outside the nucleus into the cytoplasm to make proteins and enzymes — a scientist needs to probe the tissue-printed sample with specific radioactive probes. Proteins can be visualized by appropriate antibodies. There are readily available assays for enzymes, and staining procedures can visualize many of the polysaccharides, or plant sugars.

"Ninety-five percent of all the chemical information of the cut cells

goes directly onto the paper," Varner says. "For a chemical print, you have to know what it is that you want to look for. All you need is to be clever enough to devise an assay to locate the component in question."

The traditional way to develop a chemical analysis of a plant section is to make sections and stain them. This involves several hours of dehydrating the sample in alcohol then fixing the sample and embedding it in paraffin so it can be sectioned by an instrument called a microtome, then making thin sections, washing away paraffin, staining the sample and observing the structure. The process yields beautiful pictures, but takes several days and many hours of labor to produce.

"After you've done all this, you might find you've got the wrong materials and you've wasted a lot of time," Varner says. "Certainly the chemistry you have is far removed from that which was going on in the plant at the time you collected it. One of the distinct advantages of tissue printing is the chance to observe the chemistry that was going on the instant the sample is sectioned and printed."

For example, Varner notes that tissue printing allows a field botanist or biologist to take numerous "live" prints of, say, a soybean plant ravaged by viral disease, and observe the process of the disease in several different parts — the roots, stem, petiole — without removing the plant from the soil.

Varner envisions kits for teachers and field biologists who traipse through rain forests, prairies, woods and savannahs.

"The technique won't solve everyone's problems, but it will help a lot of people," Varner says. "I've taken this to seventh graders to let them see the vascular system of soybean plants and they really enjoy it because they see things right away. I think it's better for a schoolchild to learn a simple lesson well than to get involved in something very complex."

"Half of the fun of science is being aware of how things get done," Varner adds. "The rest of the fun comes from seeing and doing science."

—Tony Fitzpatrick



# NOTABLES

**Neil N. Bernstein**, LL.B., professor of law, and **Susan E. Rhomberg**, instructor for the Program in Occupational Therapy and supervisor of occupational therapy at the Irene Walter Johnson Institute of Rehabilitation at the School of Medicine, presented a paper titled "The Role of Occupational Therapists in Industrial Relations" at the 11th annual Southern Regional Industrial Relations Academic Seminar in Memphis, Tenn.

**Jerome R. Cox**, Sc.D., professor and chair of computer science, has been appointed a member of the National Advisory Council for Human Genome Research by Louis W. Sullivan, M.D., secretary of Health and Human Services. As a council member, Cox joins seven other experts in scientific fields ranging from genetics and biochemistry to engineering and mathematics in advising the National Center for Human Genome Research, which has the goal of deciphering the complete genetic message of humans at the molecular level. Four other council members come from the general public and include leaders in the fields of public policy, law, ethics and economics. Cox will provide input on computer strategies to be considered for the human genome project, which requires the storage and analysis of immense amounts of data.

**Judy Destouet**, M.D., associate professor of radiology and head of mammography, was appointed chair of the Ad Hoc Committee on Women's Issues for the American Association of Women Radiologists.

**Charles L. Leven**, Ph.D., professor of economics, presented a paper titled "Regional Changes in Urban Population in the U.S." at a conference held in Bellagio, Italy, on Comparison of Urban Economic Development in the U.S. and Western Europe. He also visited Poland and conferred with the Foundation for Local Democracy in Lodz, was briefed on pending legislation regarding local government finance at the Ministries of Finance and Local Government in Warsaw, discussed a Sister City relationship with various agencies in Szczecin, and visited the University of Gdansk.

**Victor T. Le Vine**, Ph.D., professor of political science, was named program chair for the 1991 annual meetings of the African Studies Association, which will be held in St. Louis in October. The association is the professional organization of American scholars of Africa and programs of African studies. The annual meetings attract approximately 1,700 members of the association from all disciplines and areas of study, as well as scholars of Africa from across the world, including the African continent. Washington will be the principal host institution for the 1991 meeting and the African and Afro-American Studies Program will handle local arrangements and part of the program. **James E. McLeod**, chair of the African and Afro-American Studies Program and adjunct associate professor of German, will co-chair the meeting.

**James McGarrell**, professor of fine arts, has a solo show of his recent work at the Randall Gallery in St. Louis. The exhibit opened with a reception on Nov. 17 and will be on display through Dec. 29. McGarrell's painting titled "River Run" was permanently installed Nov. 17 in the lobby of the MCI building in downtown St. Louis. The 27-foot four-panel painting was jointly commissioned by the Forsythe Group and the MCI Telecommunications Corp. A feature article on the artist appears in the Nov. 28-Dec. 4 Riverfront Times. His work titled "Bull and Guest" is

being shown at the Museum of Fine Arts in Boston in an exhibition called "The Unique Print Today," which is a survey of contemporary monotypes, drawings and paintings that have been printed in a single impression rather than editioned.

**Carol Mitchell Simmons**, M.D., instructor of medicine and clinical attending and staff physician at Jewish Hospital's emergency room, was part of the second group ever to become certified personal trainers through the International Dance Exercise Association (IDEA). An IDEA-certified aerobics instructor, she gave a step-training demonstration at the School of Medicine last September, when the school celebrated the establishment of its smoke-free policy.

**Donald R. Stone**, business manager for the Mallinckrodt Institute of Radiology, has successfully completed the requirements to become a certified manager of patient accounts of the Healthcare Financial Management Association (HFMA) in Westchester, Ill. HFMA is the nation's leading personal membership organization for more than 28,000 health care financial management professionals. He is a past president of its greater St. Louis chapter.

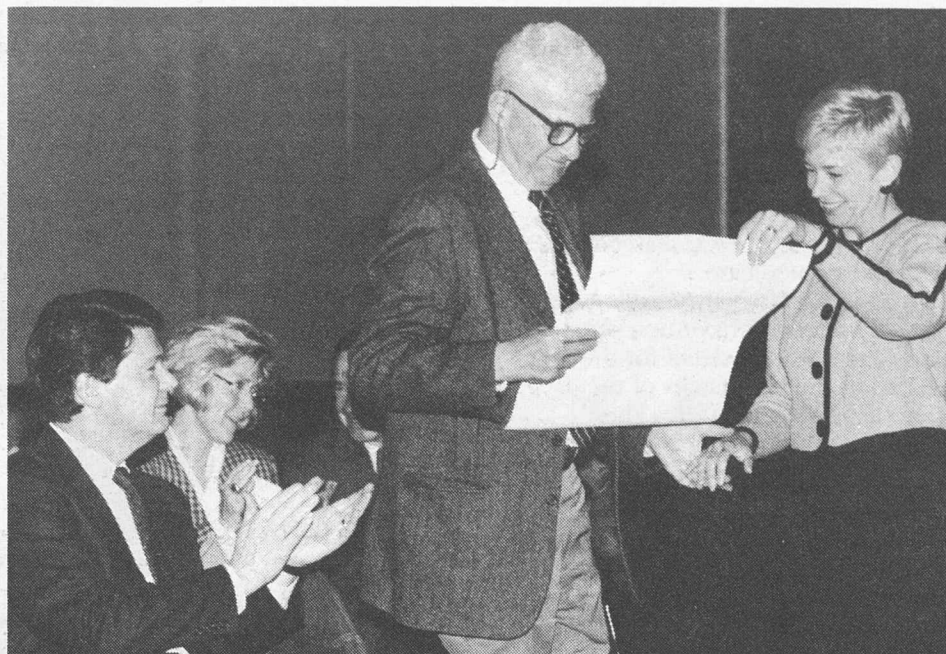
**Michael Valente**, Ph.D., director of adult audiology at the School of Medicine, was invited to speak on real ear probe tube measures and digital programmable hearing aids at the meetings of the Colorado Speech-Language-Hearing Association in Breckenridge, Colo.; Academy of Dispensing Audiologists in Hilton Head, S.C.; Scott Haug Foundation Audiology Retreat in Kerrville, Texas; North Dakota Speech-Language-Hearing Association in Minot, N.D.; University of Louisville Symposium on Hearing Aid Fitting; and University of Pittsburgh Conference on Hearing Aid Selection.

**H. Phillip Venable**, M.D., assistant clinical professor emeritus of ophthalmology, was the guest speaker at the 84th Annual Meeting of the Southern Medical Association, section on ophthalmology, held in October in Nashville, Tenn. His lecture was titled "The Role of the Ophthalmologist in the AIDS Dilemma." This material was originally presented to the Oxford Congress of Ophthalmology in 1984 and subsequently at the McMillan Eye Alumni Association and the Eye Section of the National Medical Association. Venable was one of the first ophthalmologists in the country to outline in detail the early signs of the AIDS virus in the ocular tissues. These frequently precede signs and symptoms in other parts of the body by two or three years.

**Carl Wellman**, Ph.D., professor of philosophy and Hortense and Tobias Lewin Distinguished Professor in the Humanities, presented a paper titled "Moral Consensus and the Law" at an international conference on Technical Interventions in Human Reproduction at the Zentrum fur interdisziplinare Forschung of the University of Bielefeld in the Federal Republic of Germany.

## 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.



Howard Nemerov receives a proclamation declaring Howard Nemerov Day from Dee Joyner, a representative for St. Louis County Executive H. C. Milford, as St. Louis City Mayor Vincent C. Schoemehl Jr. applauds. The St. Louis Award was given to Nemerov at a ceremony in Edison Nov. 26.

## Nemerov receives St. Louis Award

While accepting the 1990 St. Louis Award, Howard Nemerov said being recognized "for doing what you damn please for 52 years — that's all right."

Nemerov, former poet laureate of the United States and Edward Mallinckrodt Distinguished University Professor Emeritus, received the award during a ceremony held Nov. 26 in Edison Theatre.

Nemerov was named poet laureate of the United States and consultant in poetry to the Library of Congress in 1988 and held the honor until 1990.

Nemerov received the St. Louis Award for "the honor he has brought to the St. Louis community through outstanding literary achievement," said Chancellor William H. Danforth, secretary of the St. Louis Award Committee. Nemerov was best described by Richard Wilbur, whom he succeeded in the poet laureate post, as a "writer of unmatched intelligence, and a master poet equally at home in the wisecrack and in the noble voice." Danforth concluded: "Howard sees the world clearly and expresses his vision with beauty."

Nemerov won the Pulitzer Prize for poetry and the National Book Award in 1978 for *The Collected Poems of Howard Nemerov* and the Bollingen Prize for poetry in 1981. In 1987 he also won two distinguished awards. He was one of 12 recipients of the National Medal of Arts, presented by President Ronald Reagan, and was the first recipient of the Aiken/Taylor Prize in Poetry, presented by The Sewanee Review and the University of the South.

Nemerov has written 25 books, including poetry, short story and essay collections, and three novels. His most recent books were both published in

1987: *War Stories: Poems About Long Ago and Now*, University of Chicago Press, and *The Oak in the Acorn: On Remembrance of Things Past and On Teaching Proust, Who Will Never Learn*, Louisiana State University Press.

He is a member of the American Academy of Arts and Letters and National Institute of Arts and Letters and was elected a chancellor of the Academy of American Poets in 1976. He is a fellow of the American Academy of Arts and Sciences.

The poet earned his bachelor of arts degree in 1941 from Harvard University. He was a visiting professor at Washington University in 1969-1970 before joining the faculty in 1970.

In addition to Danforth, other members of the St. Louis Award Committee are: W. L. Hadley Griffin, Mrs. Lee M. Liberman, Robert Brookings Smith, Elliot H. Stein, Mrs. Monte C. Throdahl, H. Edwin Trusheim and Leon R. Strauss.

## Employer-provided courses tax change

The current tax law for employer-provided graduate courses affecting the University remission and the departmental reimbursement has been changed.

For taxable years after Dec. 31, 1990, employer-provided graduate-level tuition remission/reimbursement is no longer reportable as wages nor subject to employment tax withholding up to an annual limit of \$5,250. Amounts above the limit remain taxable. All University eligibility policies remain unchanged.

## 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.

**A new understanding of brain development** eventually could improve treatment of spinal injuries, according to an article in the Sept. 24 *Pittsburgh Post-Gazette*. A research team, headed by Dennis D. M. O'Leary, Ph.D., associate professor in anatomy and neurobiology, and in neurological surgery, found new evidence that suggests that, as the brain develops, it uses a molecular signaling system to coax axons — which transmit impulses from nerve

cell to nerve cell — to grow into a part of the brain that controls motor behavior. The research was reported in the Jan. 12 issue of *Science*.

**Lack of sleep can affect performance** in sneaky ways, says an article about executive insomniacs that appeared in the Oct. 8 issue of *Fortune*. Patricia Lacks, Ph.D., lecturer in psychology and senior clinical associate in psychology, was interviewed on ways to avoid insomnia. She recommends establishing a regular time for rising every day, including Saturday and Sunday to avoid Sunday-night insomnia; avoiding nighttime exercise; and limiting evening use of alcohol.



# MEDICAL RECORD

## Elderly's ailments may be caused by lesions

Some of the elderly's most common health problems — from constipation and stomach upset to irregular heart rate and impotence — may stem from a buildup of lesions that occurs naturally with age, say researchers at the School of Medicine.

The lesions, which Washington University scientists have described and characterized in detail for the first time, are in the nerve cells of the autonomic nervous system. The autonomic nervous system regulates body activities that typically operate below our level of consciousness — digestion, heart rate, blood pressure, temperature regulation and urinary and sexual function. The lesions, which occur in all individuals and accumulate with age, bloat nerves and interrupt the system's ability to communicate and function. The team hopes this discovery will lead to the development of medications to counteract problems associated with autonomic dysfunction.

"We think we're looking at changes that a normal, healthy person with age would develop," says pathologist Robert E. Schmidt, M.D., Ph.D., senior author of the report on neuroaxonal dystrophy in the aging. Study results appeared in the June issue of *The American Journal of Pathology*.

Schmidt and colleague Kevin Roth, M.D., Ph.D., studied autopsy results of 56 patients age 15 and older. Despite differing causes of death, all subjects showed similar autonomic nerve abnormalities. The abnormalities became more pronounced with age, particularly in those over 50 years old, and were more prevalent in men than in women. The scientists focused on nerve cells within the autonomic nervous system that are not routinely examined because their location makes them difficult to biopsy.

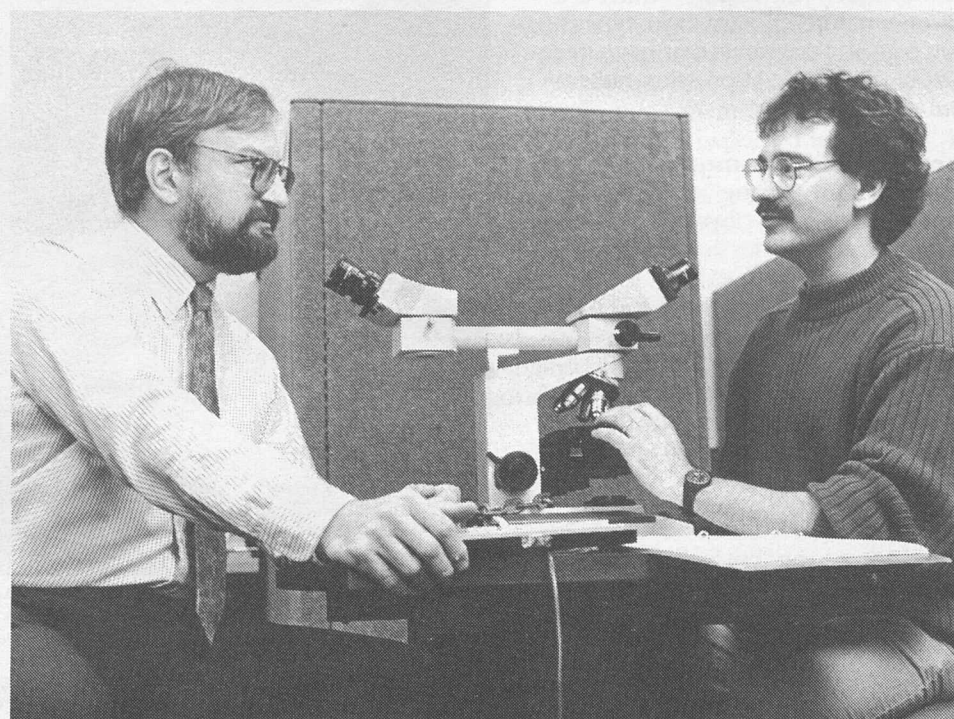
They haven't yet discovered the cause of the lesions, but Schmidt and Roth have found a marker, neuropeptide Y (NPY), which identifies a subpopulation of nerve terminals that become diseased or abnormal. NPY is instrumental in the transmission of signals within the autonomic nervous system, and is one of approximately 25 neuropeptides that aid in communication in the nervous system. Schmidt and Roth studied 10 different neuropeptides specific to the sympathetic ganglia — the nerve cells of the autonomic system — and found only NPY to be flawed. Scientists have known about NPY for several years, Schmidt says, but its function at this particular site remains a mystery.

"There is something known about NPY's function at other sites, but its role in the sympathetic ganglia is still unknown," says Schmidt. "The literature is burgeoning in this area, however, so we hope to know more soon."

### Animal models key

Schmidt was led to the human sympathetic ganglia after a decade of following animal models of autonomic nerve damage caused by diabetes. In those studies, rats were given drugs that induced diabetes, which in turn caused sluggish gastrointestinal function, nerve changes and other problems with water resorption and motility of the large bowel. Animals in the control group did not become diabetic, but as they aged they developed nerve abnormalities in the same areas as their diabetic counterparts.

"We were drawn to look at these sites of dysfunction — the sympathetic ganglia that served the bowel and other visceral structures — with an idea that perhaps the animals would



Robert E. Schmidt, M.D., Ph.D., (left) and colleague Kevin Roth, M.D., Ph.D., are collaborating on work involving the autonomic nervous system.

teach us something about dysfunction of the bowel in the human diabetic. That was the premise for the whole study," Schmidt says.

In the sympathetic ganglia, the scientists discovered markedly swollen, defective synapses. Synapses are sort of communication centers, the points at which nerve impulses pass from one neuron to another. Normally quite small, synapses became enlarged — sometimes 20 times their normal size — in diabetic animals and in disease-free animals, too. These lesions developed in diabetic animals early, about three to five months after disease onset, and occurred more frequently than in the disease-free animals, whose abnormalities appeared at about one year of age. The lesions appeared in several species, including Chinese hamsters and mice, and in animals that were genetically diabetic.

"The lesions are very impressive and unambiguous and represent some of the first findings in the autonomic nervous system in experimental diabetes that are blatantly abnormal," Schmidt says. "The axons that are normally one-half a micron in diameter will blow up to 20 times that size. We have shown that in diabetes and in aging, there are impressive structural changes in the sympathetic nervous system."

### Lesions caused by aging

Two years ago Schmidt and Roth began their current work to predict where in humans they should look for these shrouded signs of age. In the autopsy population they studied, they found striking similarities to what they had seen in rats, both in distribution and the appearance of the lesions.

The variance in age, sex and cause of death in the autopsy population was important because it verified for the researchers that the changes were related to age, not disease, Roth explains.

"The cause of death did not affect the appearance of these lesions, with the exception of diabetes," says Roth, an assistant professor of pathology and a co-author of the study. "The factor that was important was age. As humans age, more and more of these specific lesions occur. We know from other studies that as people age there are more disorders in gastrointestinal function and general autonomic function. It's possible that the lesions we're seeing may in some way contribute to or cause these abnormalities that occur in the elderly."

Age wasn't the only influence in lesion development: Sex was also a factor. In subjects age 60 and above, men had almost twice as many lesions as women.

"There is an aging effect and there is also a male/female difference," Schmidt says. "Men accumulate more lesions than women. Almost all of our animal work was done on males, so we didn't consider that there might be a difference with sex until we got to humans. The increased frequency of abnormal nerve terminals in males is interesting and might reflect male sex or male-oriented habits, such as increased smoking, alcohol use or exposure to various materials in the workplace."

Not all lesions lead to physiologic dysfunction, because all biologic systems have a built-in safety factor to compensate for small neuronal losses, the investigators point out. They believe their study has identified an age-related loss in the safety factor that may make the system susceptible to an additional insult, such as diabetes or other disease.

"It may be that with sufficient age you finally reach a critical mass of pathology that then leads to onset of disease," Roth says. There are similarities between the lesions in the aging autonomic nervous system and those that appear in brain tissue of the elderly who have had Alzheimer's Disease, he adds.

"Maybe this is a corollary in the peripheral nervous system, that as people age these lesions continue to accumulate until a point it becomes pathologic and disrupts normal function," says Roth.

While it has been medically established that people with diabetes develop autonomic dysfunction, hard data are scarce on changes in the system that occur with regard to age. Identification of the lesion is the first step in finding drugs to counteract problems associated with autonomic dysfunction, the scientists comment. As part of their ongoing study, Schmidt and Roth hope to determine when lesions occur in diabetics and how frequently.

"It's a very selective, systems-related abnormality," Roth explains. "This implies it may be possible to find pharmaceutical agents or treatment to affect the NPY-containing system. That's speculative and down the line, but it identifies lesions to target."

Kleila Carlson

## Waterston receives \$3.8 million for gene sequencing study

Robert H. Waterston, M.D., Ph.D., professor of genetics and associate professor of anatomy and neurobiology at the School of Medicine, has received a \$3.8 million grant to develop large scale DNA sequencing methods.

The three-year award comes from the National Institutes of Health's (NIH) Center for Human Genome Research. It supports in part the collaborative effort between Waterston's group at the School of Medicine and the group of John Sulston and Alan Coulson at the Medical Research Council (MRC) Laboratory of Molecular Biology in Cambridge, England. The MRC will provide \$1.9 million in funding.

The three-year project will begin sequencing the complete genetic material (DNA) of the *C. elegans* nematode, a tiny transparent worm. This animal is an important model for studying development and cell biology worldwide. The project's aim is to sequence 3 million base pairs or 3 percent of the entire DNA of the nematode. If successful in this initial endeavor, the groups will expand their efforts to tackle the total sequence. The project also involves evaluating the effectiveness of currently available automated sequencers in large scale DNA sequencing and developing computer software to aid in handling and interpretation of the large amounts of data that such a project entails.

Waterston has worked in recent years on the construction of the physical map of the worm's DNA, which serves as the basis for the sequencing project. He also is recognized for his genetic research involving muscle development in the nematode and recently received MERIT status from the NIH to continue that work.

## Pet imaging to be used for heart study

Tom R. Miller, M.D., Ph.D., associate professor of radiology at the School of Medicine's Mallinckrodt Institute of Radiology, has received a \$400,000 research grant to use Positron Emission Tomography (PET) to study heart disease.

The grant from the National Institutes of Health (NIH) will allow Miller to study coronary artery disease and heart muscle function by enhancing PET images of the heart. PET, which produces images of function rather than form, was developed at Mallinckrodt in the early 1970s. It is most frequently used to measure heart and brain blood flow, blood volume, and oxygen and glucose metabolism. PET makes images in individual slices, which can be of different thicknesses and distances apart.

Using computers, Miller and his research team will develop new three-dimensional methods of interactive viewing of the heart to study the effects of slice-spacing in the PET scanners and to generate images that portray blood flow and oxygen utilization.

The first systematic analysis of slice-spacing in PET scanners will involve 20 patients with heart disease along with an equal number of healthy volunteers. The goal of the study is to improve ways to view heart images and determine how closely to place slices in order to produce better images.



## New service offers treatment for compulsive disorder

A young man feels the need to wash his hands so frequently that he wakes up at 3 a.m. in order to finish the washing procedure in time for work. Another man can't leave until he's counted the change in his pocket, tabulating the coins to see that the numbers they represent fit into an elaborate numerology system he's devised. A woman keeps going back to assure herself that she's locked the doors; no matter how many times she checks, she's never quite convinced that it's okay to leave.

All three suffer from obsessive compulsive disorder (OCD), a psychiatric illness in which people have obsessions or compulsions that interfere with their lives.

The Department of Psychiatry at the School of Medicine has established a new program offering specialized care for OCD patients. The Obsessive Compulsive Disorder Service provides behavior and family therapy, both on an individual basis and in a group format, as a supplement to any medication treatment patients are already receiving. The most effective treatment for the illness is a combination of behavior therapy and medication.

"OCD at its worst is an exceptionally debilitating disorder," says Elliot Nelson, M.D., director of the service. "The nature of the symptoms alone may be extremely disturbing to family members, and the very force of the symptoms will often place confusing demands on the family, in addition to those that are placed on the patient."

For that reason, Nelson says, family education and therapy is an important part of the Washington University OCD service. Another strength of the new service is group therapy, he explains. Patients meet to discuss general principles and techniques, and then divide into groups of three so that patients with similar symptoms can help each other deal with the specific obsession or compulsion they have in common.

Nelson will evaluate each patient accepted into the service, and then work with the patient's physician to tailor a therapy program. For more information about the new OCD service, call 362-2465.

## Healthy lungs breathe life into young patient

A healthy pair of lungs is breathing new life into Boruch Teldon, a boy who has spent his childhood on the sidelines of activity because of a life-threatening disease.

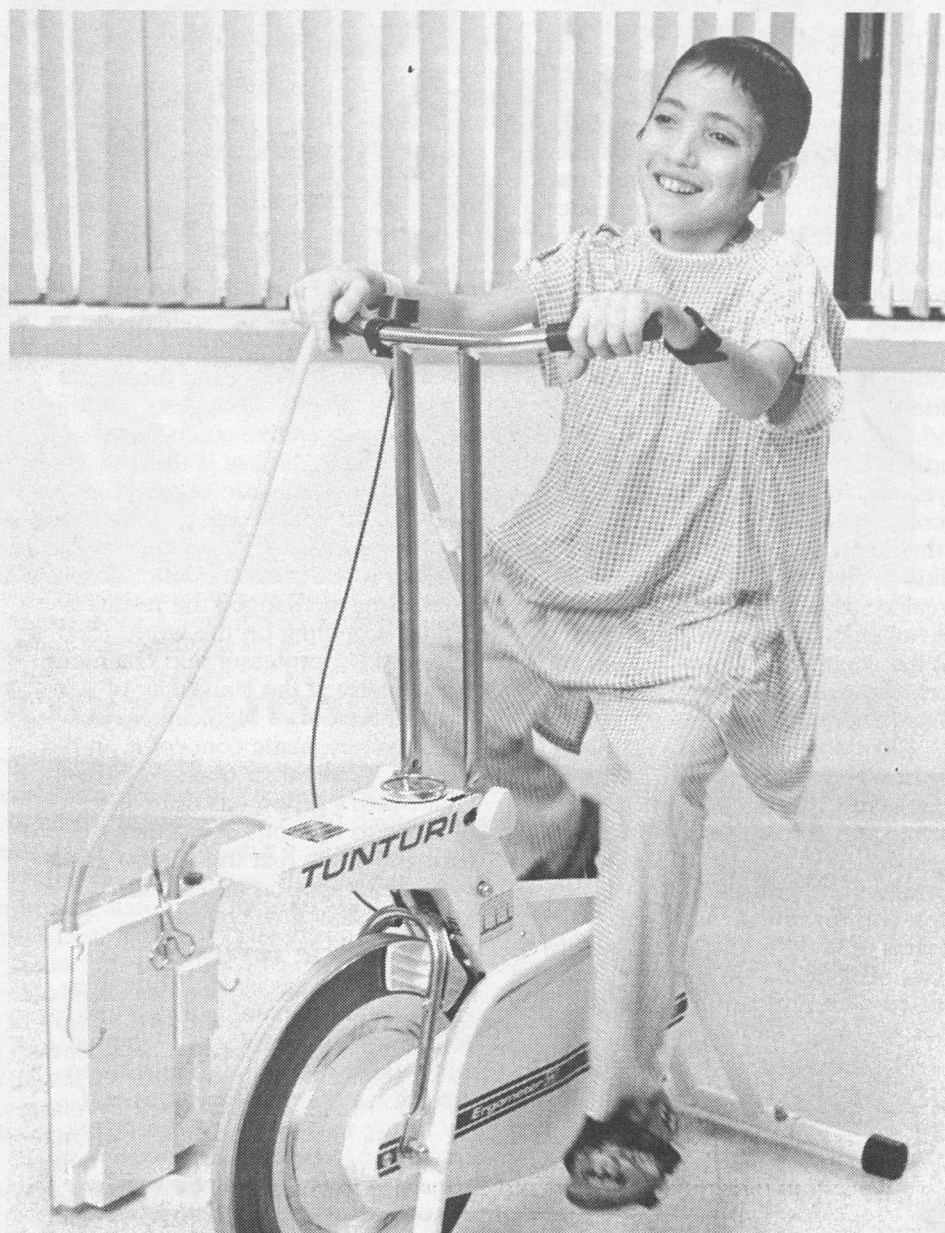
Boruch, the eldest son of Rabbi Tuvia and Chaya Teldon of Commack, N.Y., was born with cystic fibrosis (CF), a genetic disease that causes a buildup of excess mucus in the lungs and digestive tract. It took its toll on Boruch, stripping his strength and forcing him to be tethered to an oxygen tank 24 hours a day. The average lifespan of a CF patient is 25 years, but Boruch's disease caused a more rapid deterioration, making him a candidate for a lung transplant at age 11.

Boruch, who had his surgery in October, is believed to be the youngest CF patient in the country to receive a double-lung transplant. He is one of three to undergo a lung transplant at St. Louis Children's Hospital, which now offers the service through the School of Medicine's pediatric lung transplant program.

"The ability to perform pediatric lung transplants means that Washington University now offers a full range of transplant services — heart, liver, kidneys and lungs — for adults and children," says Larry R. Kaiser, M.D., associate professor of cardiothoracic surgery at the School of Medicine. "The pediatric program is still very new, but it is built on a very successful adult transplant program."

The pediatric program was launched in September by Kaiser, Thomas L. Spray, M.D., associate professor of cardiothoracic surgery, and George B. Mallory Jr., M.D., assistant professor of pediatrics. It is based on the adult lung transplant program started in 1988 by Joel Cooper, M.D., internationally known transplant surgeon and professor of cardiothoracic surgery at the School of Medicine. Since that program began, 64 adults have received lung transplants and 85 percent have experienced at least a one-year survival.

Though pediatric lung transplants are performed elsewhere, Kaiser says this is the first formal program in the country. Offering lung transplant services to children is particularly appealing, Kaiser says, because it provides an opportunity to intervene in cases of genetic disease, such as CF, which occurs in one out of every 2,000 births



As part of his rehabilitation from a double-lung transplant, Boruch Teldon rides a stationary bicycle during regular physical therapy sessions.

nationwide. The procedure is also a viable option in cases of congenital heart disease, primary or secondary pulmonary hypertension and potentially bronchopulmonary dysplasia.

Transplant candidates are those like Boruch, with end-stage lung disease and a life expectancy of 12 to 18 months, or patients with irreversible pulmonary vascular changes. Kaiser is optimistic when he talks about the opportunities the pediatric lung transplant program offers children and their families.

"For children like Boruch Teldon, this program is a chance for many firsts. It's the first time he hasn't had to worry about his next breathing treatment. It's the first time in months he hasn't been on supplemental oxygen. It has freed his life significantly, even though he is required to take daily medication (to prevent rejection)."

Boruch was released from the hospital in November. He and his mother are staying with family here and will remain in St. Louis for at least three months. During that time, Boruch will receive physical therapy and be monitored regularly for organ rejection.

"Time is on our side now," Mrs.

Teldon says. "Before (the transplant) time was our enemy. Yes, we've exchanged one problem for another and the transplant poses a new set of challenges, but there are so many promising treatments on the horizon that we have hope."

She has been at her son's side since early September when they arrived in St. Louis to await a donor organ. And while Boruch's illness has physically divided the Teldon household — Rabbi Teldon and Boruch's four brothers remain in Commack — she says the family has been strengthened by the experience.

"It's important to maintain the family unit during a stressful time like this," she says. "Events such as this can tear families apart, but ours has become stronger. This has been a test of the family that could have made us angry and resentful, but we have grown stronger because of it."

Boruch was on the nationwide transplant waiting list for six weeks, about half as long as he was told to expect. He received the lungs of a child who died in an automobile accident.

Kleila Carlson



**Dear Santa:** Three-year-olds Christopher Hausel (left) and Erin Hunt "type" their Christmas wish lists to Santa. Christopher and Erin attend St. Louis Children's Hospital Child Development Center, which has limited openings. The center is open to employees of the University and Children's Hospital. For more information, call Rosalyn Kleinberg, center director, 533-6737.

## Evens appointed to JAMA editorial board

Ronald G. Evens, M.D., Elizabeth Mallinckrodt professor and director of the School of Medicine's Mallinckrodt Institute of Radiology, has been appointed to a two-year term on the editorial board of the Journal of the American Medical Association (JAMA), the 107-year-old medical journal commonly referred to by physicians throughout the world.

As one of 25 board members, Evens will write editorials and articles, and serve as a resource for reviewing radiological manuscripts and to advise the editor.

Evens' expertise in business and

radiology has led him to serve as consultant to industry, medical centers, universities and governmental organizations. His widely known studies of the clinical and socioeconomic aspects of diagnostic imaging are being used to improve the effectiveness of health-care delivery throughout the United States.

Evens is the author of more than 170 scientific journal and textbook articles, covering subjects as varied as administrative medicine, medical cost-benefit analysis, new technology development and evaluation, diagnostic radiology and nuclear medicine.



# MEDICAL RECORD

## Review shows ulcerative colitis is not psychosomatic

The number of diseases physicians classify as psychosomatic, or psychological in origin, is dwindling to the point that soon the concept may become obsolete. Long gone from the group are migraine, arthritis, asthma and hyperthyroidism — each deleted as scientists learned more about those disorders. The latest casualty is ulcerative colitis, once near the head of the list of psychosomatic diseases.

"We've looked hard at the existing studies, and we can't find evidence to support a psychosomatic model for ulcerative colitis," says Carol North, M.D., assistant professor of psychiatry at the School of Medicine. According to North, a careful review of the literature linking ulcerative colitis to emotional disorder has revealed major flaws in that research. She believes the review should put to rest the stigma of the psychosomatic label historically borne by ulcerative colitis patients.

Ulcerative colitis (an inflammatory bowel disease, or IBD, along with the related Crohn's disease) is a chronic and sometimes life-threatening digestive disorder characterized by ulceration of the inner lining of the colon and rectum. Its real cause remains unknown. Approximately two million Americans are thought to be afflicted with IBD, and 30,000 new cases are diagnosed each year.

Many ulcerative colitis patients carry unnecessary emotional "baggage," North says, because they have accepted the traditional notion that, "it's all in your head." The latest research shows, however, there is "no evidence that ulcerative colitis is in any way a special disease in its relation to stress," North explains.

With her colleagues, gastroenterologists Raymond E. Clouse, M.D., and David H. Alpers, M.D., North examined all of the scientific articles that have been published on the subject in English since a 1930 paper first reported an association between emotional factors and ulcerative colitis. Half of the controlled studies and 90 percent of the uncontrolled studies claim to substantiate a psychosomatic basis for ulcerative colitis, helping to shape what North calls the "general opinion on the topic."

Assessing those studies by current standards, the researchers discovered that only a few employed "reasonably adequate methods," and that those do not support a psychosomatic basis for the disease. In their report, published in the August 1990 issue of the *American Journal of Psychiatry*, the authors write, "Examination of the results of the seven best studies ...revealed that significant psychopathology and prior life events are found in patients with ulcerative colitis no more often than in control subjects."

### Erasing the stigma

The review finally debunks the notion "that if you have ulcerative colitis, you are somehow fueling your own fire — that in some way emotional status affects the course of the illness," says Alpers, professor of medicine and chief of the gastroenterology division. "That is just not true. And once we all agree, these patients will no longer be made to feel blame for their illnesses."

North adds that patients have long confronted the popular misconception, sometimes even hearing it from their physicians. They have accepted it "perhaps because it is logical to link the mind with the body. They may have tried to control their diseases by controlling stress," she says. "Others were embarrassed to hear that the disease had a psychiatric

origin. But people with a serious disease do not need to worry about whether or not they are sane." In the most drastic cases, North says, it's possible that proper medical care has been delayed because patient, physician or both believed the disease to be psychosomatic.

"There may be a population of physicians not aware of this change in thinking," says Clouse, an associate professor of medicine and a collaborator on the research. "Even the recent psychiatric literature suggests that the concept of ulcerative colitis as a psychosomatic disease is thriving." He adds that although earlier researchers undoubtedly believed they were doing good science, time has changed the methods researchers use, and the methods have changed the results.

Commenting on the work, John Helzer, M.D., professor and chairman of psychiatry at the University of Vermont School of Medicine, says, "The psychosomatic concept is an old one, but it has never been very tight. What North's group has done is to subject it to rigorous investigative work and show that there is no good evidence to support an emotional origin for ulcerative colitis."

### Every article reviewed

The reviewers used a computer search, the Index Medicus and article bibliographies to collect 172 journal publications concerning the relationship between ulcerative colitis and psychiatric factors; 34 articles were discovered to be duplicate reports of the same studies, leaving a total of 138 for consideration. North reports that 25 of the articles were case studies of single patients, and only 34 of the studies were controlled, a basic requirement for modern scientific research that, in this case, dictates the comparison of subjects to patients with other medical illnesses. Only by making that comparison can the issue of whether any major illnesses result from psychiatric distress be accurately addressed.

The researchers organized flaws in methodology into five categories. Sampling errors included using such small numbers of subjects that statistical analysis was impossible. Some studies did not segregate gastrointestinal diseases, lumping them all. Others took only psychiatric patients for subjects. The authors write of those studies, "Obviously, to begin by selecting a group of psychiatric patients for a study virtually guarantees the finding of a wealth of psychopathology."

Of the 25 percent of the studies that were controlled, some failed to gather demographic information so that subjects and members of the control group could be shown to be equivalent. That flaw can lead to spurious results because, for example, certain psychiatric disorders are more common among women than men.

Early studies were judged unreliable when they imposed no diagnostic criteria for psychiatric disease or did not employ standardized instruments of evaluation. Only during the past 20 years have repeatable, structured diagnostic criteria been developed for psychiatry, and the researchers write that prior to that time, "methodologically sound studies were next to impossible...."

In some cases, data analysis simply was not done. And if it was, sometimes the process was never described for evaluation.

Finally, errors of interpretation often ended in unwarranted assumptions of causation, North says. The review team reports, for example, that several studies claimed an abundance

of psychopathology among ulcerative colitis patients although they showed only a 30 percent rate of psychiatric disease over the patients' lifetimes, no higher than what is expected in the general population.

Seven of the studies met the requirements for adequate scientific methods, using control groups of medically ill patients and standardized instruments. All seven investigated the link between ulcerative colitis and psychiatric diagnoses, but none reported a positive association. Three of the studies found psychiatric disorders among ulcerative colitis

patients at the rates of 25, 26 and 34 percent, all within the range expected for the population at large.

As a result of the study, the investigators say that a treatment plan for ulcerative colitis based on a psychosomatic model would be a "disservice" to the patient. They do not claim, however, that mood can have no effect on disease, just that ulcerative colitis is no different from any other ailment in that regard. The researchers therefore urge abandoning "unsupported generalizations about the psychiatric aspects of ulcerative colitis."

Steve Kohler

### Operation HealthStreet

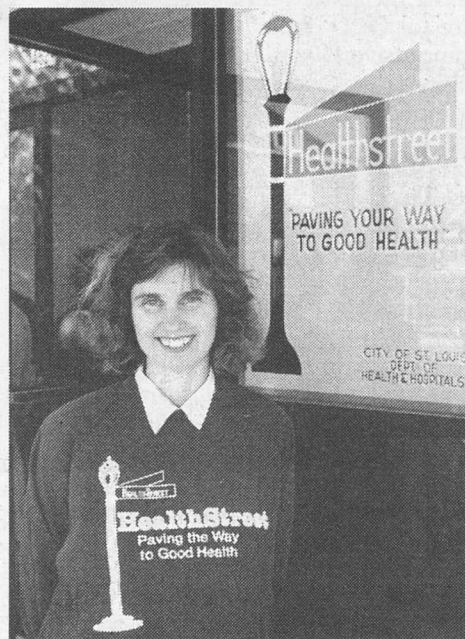
## AIDS testing is among services offered at two outreach centers

A young mother with two toddlers and a baby on the way needs advice on family planning, but doesn't know where to turn. An elderly man with a family history of hypertension has questions about how to control the disease but can't afford a visit to a doctor.

HealthStreet, an outreach center that opened recently at two inner-city locations, can help provide the answers. Funded by a National Institute on Drug Abuse grant awarded to the School of Medicine, the centers provide public health services in addition to offering AIDS education and HIV testing. Testing and referral for tuberculosis, diabetes and high blood pressure will be offered, as will family planning and immunizations.

"There is an urgent need to provide treatment programs for intravenous drug users who are also at risk for HIV infection," says epidemiologist Linda B. Cottler, Ph.D., principal investigator of the study. "This project enables us to educate this high-risk population and monitor their habits following treatment."

The centers are part of a \$3.5 million project in the School of Medicine's psychiatry department. The purpose of the project is to persuade drug users to seek treatment by providing 300 new treatment slots at a drug-free program and a methadone maintenance clinic. Treatment is



Linda Cottler, Ph.D., attends the ribbon cutting ceremony at the Delmar site of HealthStreet, a joint project of the School of Medicine and the City of St. Louis. The centers are part of a \$3.5 million grant awarded to Cottler to prevent AIDS among drug users.

provided free of charge. In addition, the project will provide street outreach in high risk areas to educate the community on ways to reduce the risk for HIV infection. The centers are located at 4624 Delmar and 3552 Gravois.

For more information, contact Cottler at 362-2426.

## Area man is longest to live on heart device

A 61-year-old St. Louis man has undergone a successful heart transplant after surviving a record 91 days on a heart assist device implanted at the medical center.

The device, called a Thoratec Ventricular Assist Device (VAD), was implanted at Jewish Hospital, one of only 20 hospitals in the United States using this mechanical circulatory support system. The Thoratec VAD had not previously been used for this length of time.

The Thoratec VAD has two uses, explains Thomas Wareing, M.D., assistant professor of surgery at the School of Medicine and cardiothoracic surgeon at Jewish, Barnes and St. Louis Children's hospitals. "One is for what we call bridging. That's when the patient's heart is supported while waiting for a transplant," he says. "The other is when the heart needs support while recovering after surgery. A patient can then actually be removed from the VAD and his heart can function normally again."

The patient received the device after undergoing emergency coronary bypass surgery following unsuccessful angioplasty. He could not be weaned from the heart-lung machine because of severe heart failure, so Thoratec VADs were implanted on the left and right side of the heart. Surgeons had to implant two devices because both sides of the patient's heart were in such poor condition.

Although the patient was stabilized, his heart would not recover sufficiently to permit removal of the device. He then became a candidate for a heart transplant, which he received at Barnes Hospital. The patient is now recovering at home.

The Thoratec VAD functions like an artificial heart, the advantage being that the patient's heart does not have to be removed in order for the device to work. The VAD connects directly to the patient's heart through a system of tubing and is controlled by a console that regulates the pumping function.



# PERSONNEL NEWS

## TIAA PERFORMANCE UPDATE

### Growth Rates of a Premium Allocated to TIAA

Periods Ending 9/30/90	Average Annual Compound Rates	Cumulative Rates
1 year	9.24%	9.24%
5 years	10.58%	65.32%
10 years	10.69%	176.19%

## CREF PERFORMANCE UPDATE

### CREF Stock Account \*

Periods Ending 9/30/90	Average Annual Compound Rates of Total Return	Cumulative Rates of Total Return
1 year	-11.87%	-11.87%
5 years	14.41%	96.03%
10 years	14.13%	275.02%

### CREF Money Market Account

For the seven days ending October 16, 1990:

Net annualized current yield:	7.77%
Net annualized effective yield:	8.07%

Periods Ending 9/30/90	Average Annual Compound Rates of Total Return	Cumulative Rates of Total Return
1 year	8.48%	8.48%
Since inception (4/1/88)	8.55%	22.77%

### CREF Bond Market Account

Cumulative Rate of Total Return

Since inception (3/1/90 - 9/30/90)	3.80%
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### CREF Social Choice Account

Cumulative Rate of Total Return

Since inception (3/1/90 - 9/30/90)	-2.88%
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The past performance shown here is not indicative of future rates of return from the CREF accounts. Yields may vary, and the total return for each account may rise or fall. Thus, the units you own in the CREF accounts may be worth more or less than their original price. CREF investment results shown above are after all investment, administrative, and distribution expenses.

\*As of April 1, 1988, a registration statement for CREF variable annuities became effective under the rules and regulations of the Securities and Exchange Commission, but CREF Stock's management and investment objectives did not change.

## CREF money market account and TIAA are steady performers

Is recession on the horizon? Is inflation rising? Are the bears devouring Wall Street? At a time like this, it's natural to wonder how the uncertain economy might affect your CREF stock accumulations. The answer depends somewhat on how long a view you're taking. So far, this hasn't been a banner year for stocks. But over time, the stock market has outperformed many other types of investments; you just have to be able to stay the course and wait out its downturns.

Meanwhile, there are alternatives for people who find the downturns too much to take.

With their historically safe and steady (though unspectacular) returns,

money market accounts appeal to many investors.

For cautious participants, or for risk-takers who practice market timing, the CREF Money Market Account continues to be a comparatively low-risk option for all or part of their CREF accumulations. The Money Market Account has refused to sag along with the economy, and has even maintained a modest rate of growth. The table below shows just how steady the Money Market Account has been over the past two years.

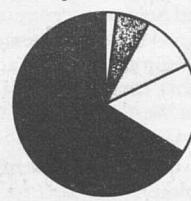
The account invests virtually all its assets in securities maturing in less than a year (though some may have

remaining maturities of up to two years). Below is the current portfolio, as well as the account's largest holdings.

TIAA is a safe choice, offering real protection for your retirement accumulation. With its guarantee of principal and its specified interest rate, your TIAA accumulation can never go down — only up. It will increase by at least the guaranteed rate, but the total rate will vary up or down from one year to another.

There's opportunity too. TIAA annuities provide for potential dividends (credited as additional interest), based on the success of TIAA's long-term investments. While long-term interest rates are not as high as they

### The CREF Money Market Account Portfolio as of September 30, 1990



- 66.2% Commercial paper
- 15.9% Bankers' acceptances
- 10.7% Certificates of deposit
- 5.5% U.S. government agency securities
- 1.7% Medium-term corporate notes and loan participations

CREF Money Market Account invested assets: \$2.7 billion.

## Reminder to Major Medical enrollees

As you are now aware, Pension Associates Inc. (PAI) is replacing TIAA as the administrator of the Major Medical plan. PAI is a subsidiary of Blue Cross-Blue Shield of Missouri. The coverage under the Major Medical plan will remain basically the same as it was under TIAA.

The real purpose of this notice is to remind you that action must be taken to cancel or continue the PAI Major Medical plan.

### Active employees

The open enrollment period is over and you may not change your current health coverage unless you have a family status change. A family status change was described in the Oct. 1, 1990, open enrollment letter. Therefore, you will be continued in the Major Medical plan unless you canceled the coverage during open enrollment.

However, no claims will be paid by PAI until they have received your new enrollment card.

In addition, all active employees who have not completed and returned the enrollment card by Nov. 15, 1990, may face delays in receiving their PCS prescription drug card.

## Mental health services offered at Jewish

Jewish Hospital at the Washington University Medical Center offers a full range of mental health services provided by psychiatrists, psychologists and social workers. Their services include:

- Inpatient and outpatient psychiatric services (454-8560).
- An Alcohol and Chemical Dependency Program (454-8587), which includes inpatient care as well as an evening outpatient program.
- An outpatient psychiatric clinic

## Personnel News

Personnel News appears monthly in the Record and is prepared by Gloria W. White, vice chancellor for personnel and affirmative action officer, 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.

Total Interest Rates (Guaranteed Interest Plus Dividends) Credited to TIAA Accumulating Annuities: March 1, 1990 - February 28, 1991	
Period During Which Funds Were Applied	
Since 1989	8.50%*
1988 - 1989	9.25%**
1986 - 1987	8.75%
1982 - 1985	10.00%
1979 - 1981	9.25%
Before 1979	8.75%

\*8.25% for TIAA Supplemental Retirement Annuities

\*\*9.00% for TIAA Supplemental Retirement Annuities

have been in past years, they still offer a meaningful return. The table above looks at the total interest rates (including the current dividend) participants earn for their TIAA accumulations.

Because of TIAA's long-term nature, transfers are not available. The trade-off is that TIAA generally credits higher interest income than money market accounts. (Future plans will provide for gradual transfers out of TIAA starting in 1991.)

If you're reassessing how you allocate your contributions, or if you're thinking of transferring funds in light of the changing economy, TIAA suggests you look at their Library Series booklets *Guiding Your Retirement Savings* and *Charting TIAA and the CREF Accounts*. They're good sources of basic information on the respective advantages of TIAA and the CREF accounts.

### Retirees

You will also be required to complete the enrollment card before any claims will be paid. If you would like to cancel the coverage, you must complete a cancellation form. Otherwise, you automatically will be continued in the plan.

You may return the enrollment cards or complete cancellation forms in the appropriate benefits office.

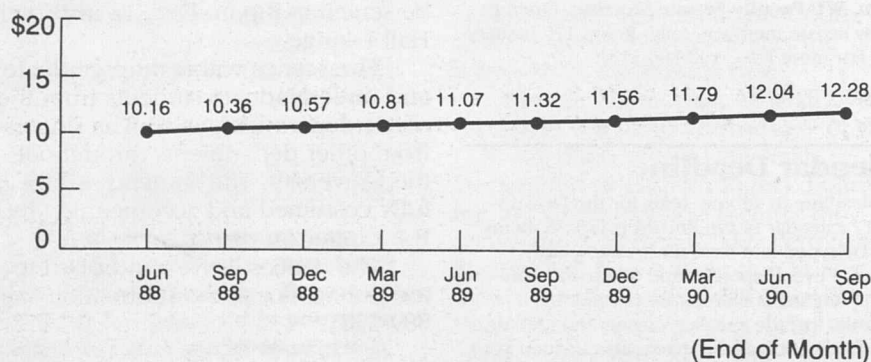
## Prescription cards are on the way

The PCS prescription cards should be mailed to you the first week of December, along with a description of the plan.

All active employees participating in a Washington University medical plan will receive the PCS card automatically. No action is required by you.

If you need a prescription filled and you have not received your card, you should purchase your prescription from a PCS pharmacy. You will then be entitled to file a claim for reimbursement with PCS.

### CREF Money Market Account Quarter-End Accumulation Unit Values, April 1988 - September 1990



The account's initial accumulation unit value was set at \$10.00 on April 1, 1988, its first day of operation. \$1 invested on that date would have grown to \$1.23 by September 30, 1990.

## Review paycheck for benefit changes

All the changes that you made during the health insurance open enrollment should be reflected on your November paycheck. Please review this paystub to determine the extent of any errors. If you find an error, please notify the Personnel Office at 889-5990 as soon as possible.

Remember that the effective date of all changes was Dec. 1, 1990.



# CALENDAR

Dec. 6-15

## LECTURES

### Thursday, Dec. 6

**8 a.m. Dept. of Pediatrics Grand Rounds,** "Importance of Early Childhood Intervention," T. Berry Brazelton, clinical prof. of pediatrics emeritus, Harvard Medical School. Clopton Aud., 4950 Audubon Ave. (Also being televised in Wohl Hall, Wohl Hospital.)

**Noon. Dept. of Genetics Seminar,** "Chaperone-assisted Pilus Assembly in *E. coli*," Scott Hultgren, WU Dept. of Molecular Microbiology. Room 816 McDonnell Medical Sciences Bldg.

**2:30 p.m. Dept. of Cell Biology Thesis Defense,** "Molecular Analysis of Germa-Soma Differentiation in *Volvox*," Lai-Wa Tam, WU Dept. of Biology. Room 322 Rebstock Hall.

**4 p.m. Dept. of Chemistry Seminar,** "(Monocyclopentadienyl) Scandium (Amido) Complexes: Well-Defined Single Component Catalysts for the Polymerization of  $\alpha$ -Olefins," Pamela Shapiro, DuPont Central Research. Room 311 McMillen Hall. (Coffee: 3:30 p.m., outside Room 311 McMillen Hall.)

**4 p.m. Dept. of Pathology Seminar,** "Altering Genes in Animals," Oliver Smithies, Dept. of Pathology, U. of North Carolina. Third Floor Aud., Children's Hospital, 400 S. Kingshighway.

**4 p.m. Central Institute for the Deaf Seminar,** "Presbycusis: A Biological and Epidemiological Overview," George A. Gates, prof., WU Dept. of Otolaryngology. Second Floor Aud., Clinics and Research Bldg., 909 S. Taylor Ave.

**4:15 p.m. Dept. of Philosophy Colloquium,** "Fichte's Solipsism. A Rehabilitation of Jean Paul," Markus Raab, WU graduate student. Hurst Lounge, 201 Duncker Hall.

**4:30 p.m. Dept. of Mathematics Colloquium,** "The Geometry of Great Circle Tubes," Sharon Pedersen, U. of California. Room 109 Cupples I. (Tea: 4 p.m., Room 200 Cupples I.)

### Friday, Dec. 7

**Noon. Dept. of Cell Biology and Physiology Seminar Series,** "Extracellular ATP as a Cytotoxic Molecule," Francesco Di Virgilio, U. of Padova. Cell Biology and Physiology Library, Room 423 McDonnell Medical Sciences Bldg.

**Noon. Dept. of Surgery Transplant Seminar,** "Non-activating Anti-CD3 Monoclonal Antibodies: An Approach Toward Optimizing *in vivo* Therapy," E. Steve Woodle, asst. prof., WU Dept. of Surgery. Third Floor Aud., Children's Hospital, 400 S. Kingshighway Blvd.

**Noon. Dept. of Physics Brown Bag Lunch Seminar,** "What's SNU? Kamiokande and the Solar Neutrino Problem," Ian Redmount, WU Dept. of Physics. Room 241 Compton Hall.

**6 and 8:30 p.m. WU Association Travel Lecture Series,** "New Zealand: An Outdoor Adventure," Grant Foster, filmmaker. Graham Chapel. For ticket info., call 889-5212.

**8:30 p.m. Hillel Lecture,** "Love and Sex in the Jewish Mystical Tradition," David Ariel, pres., Cleveland College of Jewish Studies. Hillel House, 6300 Forsyth Blvd. For more info., call 726-6177.

### Saturday, Dec. 8

**9 a.m. Saturday Morning Neuroscience Seminars,** "Use of Patient-Controlled Analgesia in Acute Pain Management," Paul White, WU Dept. of Anesthesiology, and "Pain as Seen in Psychiatric Patients," Samuel Guze, WU Dept. of Psychiatry. Erlanger Aud., McDonnell Medical Sciences Bldg.

### Sunday, Dec. 9

**4:30 p.m. Assembly Series Lecture,** "Human Rights and the Press: A View From South America," Enrique Zileri, editor, Caretas. Also remarks by William F. Woo, editor, St. Louis Post-Dispatch, and former Senator Thomas F. Eagleton, University Professor of Public Affairs. Graham Chapel. For reservations, call 721-1961.

### Monday, Dec. 10

**7 a.m. School of Medicine, Div. of Cardiothoracic Surgery, Dept. of Surgery Seminar,** "Update on Skeletal Muscle for Cardiac Assist," Larry M. Stephenson, chief, Div. of Cardiothoracic Surgery, Harper Hospital, Wayne State U. West Pavilion Amphitheatre, Barnes Hospital.

**4 p.m. Dept. of Biology Seminar,** "Regulatory Gene Interactions Determining Cell Fate During *Drosophila* Embryogenesis," Steve Dinardo, Rockefeller University. Room 322 Rebstock Hall.

**5:15 p.m. Mallinckrodt Institute of Radiology City-Wide Radiology Conference,** "Color Flow Doppler — Update 1990," Christopher R.B. Merritt, chair, Dept. of Radiology, Ochsner Clinic. Scarpellino Aud., Mallinckrodt Institute of Radiology. For more info., call 362-7130.

### Tuesday, Dec. 11

**4 p.m. Dept. of Chemistry Seminar,** "Molecular Electronic Interactions at Semiconductor-derived Interfaces," Gerald Meyer, U. of North Carolina. Room 311 McMillen.

### Wednesday, Dec. 12

**Noon. Neuroscience Luncheon Seminar,** "Polyamines and NMDA Receptors," Carl Romano, WU Dept. of Ophthalmology. Room 928 McDonnell Medical Sciences Bldg.

**4 p.m. Dept. of Mathematics Seminar,** "Introduction to TeX," Steven G. Krantz and Stanley Sawyer, WU professors of mathematics. Room 199 Cupples I.

**4:15 p.m. Dept. of Biochemistry and Molecular Biophysics Seminar,** "Thymidylate Synthetase Structure, Target for Drug Design, and the Control of an Enzyme by Phosphorylation," Robert Stroud, Dept. of Biochemistry, U. of Calif., San Francisco. Erlanger Aud., McDonnell Medical Sciences Bldg.

### Thursday, Dec. 13

**2 p.m. Evolutionary and Population Biology Thesis Defense,** "Evolution of the Transposable Element *mariner* in *Drosophila* Species," Kyoko Maruyama, WU Dept. of Genetics. Room 816 McDonnell Medical Sciences Bldg.

**4 p.m. Neural Sciences Program Divisional Seminar,** "Developmental Interactions Between Sympathetic Neurons and the Targets They Innervate," Story Landis, Dept. of Neurosciences, Case Western Reserve U. Cori Aud., 660 S. Euclid Ave.

**4 p.m. Dept. of Pathology Seminar,** "Transgenic Mouse Studies of Intestinal Epithelial Cell Differentiation," Jeffrey Gordon, Depts. of Biochemistry and Molecular Biophysics, and Medicine. Third Floor Aud., Children's Hospital, 400 S. Kingshighway Blvd.

**4 p.m. Dept. of Chemistry Seminar,** "Determination of the Symmetry of the Pair Function in Superconducting YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>," Gordon Yee, DuPont Central Research. Room 311 McMillen. (Coffee: 3:45 p.m.)

**4 p.m. Central Institute for the Deaf Seminar,** "Quantized Temporal Integration Can Convert Cochlear Output Into Something Like the Auditory Images We Hear," Roy D. Patterson, prof., Medical Research Council, Cambridge, England. Second Floor Aud., Clinics and Research Bldg., 909 S. Taylor Ave.

**4 p.m. Dept. of Earth and Planetary Sciences Colloquium,** "Evolution of Continental Crust: Constraints From Isotopic Compositions and Geochronology," Yemane Asmerom, postdoctoral fellow, Dept. of Earth and Planetary Sciences, Harvard U. Room 102 Wilson Hall.

### Friday, Dec. 14

**Noon. Dept. of Cell Biology and Physiology Seminar,** "Biochemical Membrane Mechanisms in Arrhythmogenesis During Ischemia," Peter B. Corr, WU Dept. of Internal Medicine. Room 423 McDonnell Medical Sciences Bldg.

**4 p.m. Microbial Pathogenesis Seminar Series,** "Genetic and Biochemical Studies on the *vir* Locus of *Bordetella pertussis*," Scott Stibitz, Center for Biologic Evaluation and Research, Food and Drug Administration. Room 775 McDonnell Medical Sciences Bldg.

### Saturday, Dec. 15

**9 a.m. Saturday Morning Neuroscience Seminar,** "The Role of Peptides in the Modulation of Nociception," Mary Womack, WU Dept. of Cell Biology, and "Biogenesis of Substance P and Aspects of its Receptor Activation," Jim Krause, WU Dept. of Anatomy and Neurobiology. Erlanger Aud., McDonnell Medical Sciences Bldg.

## PERFORMANCES

### Friday, Dec. 7

**8 p.m. WU Dance Theatre Presents** new choreography by students, faculty and alumni, directed by Robert Small, WU artist-in-residence. (Also Dec. 8, same time.) Cost: \$7 for general public; \$5 for senior citizens, students and WU faculty and staff. Edison Theatre. For more info., call 889-6543.

## MUSIC

### Saturday, Dec. 8

**7:30 p.m. Dept. of Music Graduate Piano Recital** with John Cornelius. Free. Graham Chapel. For more info., call 889-5574.

### Sunday, Dec. 9

**8 p.m. Dept. of Music Chamber Choir Concert,** directed by John Stewart. Free. Graham Chapel. For more info., call 889-5574.

### Monday, Dec. 10

**8 p.m. Dept. of Music Chamber Ensembles** featuring the flute choir, piano trio, flute quartet, baroque ensemble, and cello quartet. Free. Graham Chapel. For more info., call 889-5574.

### Wednesday, Dec. 12

**8 p.m. Dept. of Music Presents Scenes From Mozart Operas** performed by members of the opera class, directed by John and Julia Stewart. Free. Brown Hall Lounge. For more info., call 889-5574.

### Friday, Dec. 14

**8 p.m. Dept. of Music Cello Recital** with Karen Lynch. Free. Steinberg Hall Aud. For more info., call 889-5574.

## EXHIBITIONS

**"Hemingway and Popular Culture."** Through Jan. 15, 1991. Special Collections, Level 5, Olin Library. 8:30 a.m. to 5 p.m. weekdays. For more info., call 889-5495.

**"Caliban's New Master: The Emergence of Medicine in Early Modern Europe (1450-1700)."** Through Jan. 3, 1991. Rare Books Division, Seventh Floor, School of Medicine Library, 660 S. Euclid Ave. 8 a.m. to midnight Mon.-Thurs.; 8 a.m. to 10 p.m. Friday; 8:30 a.m. to 6 p.m. Saturday; and 1 to 10 p.m. Sunday. For more info., call 362-4234.

**"Roman Republican Coins."** Through May 19. Gallery of Art, lower gallery, Steinberg Hall.

**"Resources at Risk,"** an exhibit of works by St. Louis environmental artist Tina Brown. Through Dec. 14. Bixby Gallery, Bixby Hall. 10 a.m.-4 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4643.

## FILMS

### Friday, Dec. 7

**7 and 9:30 p.m. Filmboard Feature Series,** "Beaches." (Also Sat., Dec. 8, same times, and Sun., Dec. 9, at 7 p.m.) \$3. Room 100 Brown Hall.

**Midnight. Filmboard Midnight Series,** "Dr. Strangelove." (Also Sat., Dec. 8, same time, and Sun., Dec. 9, at 9:30 p.m.) \$3. Room 100 Brown Hall. On Fri. and Sat., both the 9:30 p.m. and midnight films can be seen for a double feature price of \$4; both Sun. films can be seen for \$4.

## SPORTS

### Saturday, Dec. 8

**7 p.m. Women's Basketball.** WU vs. Blackburn College. Field House.

### Tuesday, Dec. 11

**7:30 p.m. Women's Junior Varsity Basketball.** WU vs. Kaskaskia College. Field House.

### Wednesday, Dec. 12

**7:30 p.m. Women's Basketball.** WU vs. McKendree College. Field House.

### Thursday, Dec. 13

**5:30 p.m. Men's Junior Varsity Basketball.** WU vs. Millikin U. Field House.

**7:30 p.m. Men's Basketball.** WU vs. Millikin U. Field House.

## MISCELLANY

### Friday, Dec. 7

**Noon. Woman's Club Mini-Luncheon and Program,** "Dean Bellos and His Hellenic Dancers; A Taste of Greek Culture and Spirit." Women's Bldg. Cost: \$3 for members and \$4 for their guests. Free parking and shuttle services will be available from the northeast corner of the main campus parking lot (near Millbrook and Skinker.) A WU van will operate from 11:30 a.m.-12:15 p.m., and will return passengers to the parking lot after the program. For info., call 721-3573.

### Tuesday, Dec. 11

**4 p.m. WU Faculty Senate Meeting.** Open to faculty senate members only. Room 110 January Hall. For more info., call 889-5151.

## Calendar Deadline

The deadline to submit items for the Dec. 13-Jan. 17 calendar of the Record is Dec. 6. 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 Deborah Parker, calendar editor, Box 1070, or by electronic mail to p72245DP at WUVMC.

## International students need host families

The International Office is seeking 70 families to participate in the Host Family Program beginning January 1991.

The Host Family Program is designed to promote cultural exchange between the University's international students and American families. Host families do not provide living accommodations for the students, but do give them a taste of American life through monthly gatherings such as family dinners, trips to the theatre and sports events. The families also help students become oriented to the local community.

In past years, the hosts have ranged from single parents to three-generation families. Students and families participate in the program for a minimum of one academic year and are paired according to common interests. During the 1989-90 academic year, more than 800 foreign students from 72 countries attended Washington. Of the 800 students, more than 75 percent were enrolled in graduate programs and the majority were males. The University's largest number of international students were from China and Taiwan.

For more information, call Joe Ruland, international student adviser, at 889-5910.

## Magnificat, carols and folk songs featured in concert

The Washington University Chamber Choir, directed by John Stewart, will perform a free concert at 8 p.m. Dec. 9 in Graham Chapel.

The concert will feature a magnificat by Johann Pachelbel (1653-1706), which was discovered in East Germany in 1986 and published in 1989. Magnificats, which are scriptures put to music, are sung as part of a religious service. Pachelbel's magnificat, which is one of several he wrote, is scored for two piccolo trumpets and an organ.

The concert also will feature Christmas carols, folk songs by Brahms and Bartok and Elizabethan madrigals.

The chamber choir recently has been expanded from 14 to 25 singers, and includes not only students and graduate students in the Department of Music, but faculty from both the Hilltop and Medical School campuses. For information, call 889-5581.

## Mozart opera scenes will be performed

Five scenes from Mozart operas will be staged at 8 p.m. Dec. 12 in Brown Hall Lounge.

The scenes will feature graduate and undergraduate students from the music department, as well as singers from other departments throughout the University. The students will be fully costumed and accompanied by B.J. Clutter on piano.

The concert is free and open to the public. For more information, call 889-5581.