Libraries' triage unit resuscitates terminal texts before it's too late

In this issue

Friday the 13th marked the last day for manual student registration at Washington University and the end of long lines in Francis Gymnasium. In April students will register for fall 1995 classes electronically from computers across campus.

Seismologist's find challenges theories

WASHINGTON UNIVERSITY IN ST. LOUIS

Brittle book syndrome

There is an all-out war being waged in the libraries at Washington University. On one side: the book preservationists, armed with the latest surgical techniques, a triage unit, even a guillotine. On the other side: humidity, cockroaches, water, acid, heat, crumbs and dozens of other assailants that can slowly kill a book.

"See this book?" asked Roxanna Herrick, preservation administrator of University Libraries, folding the corner of a yellowed page and watching the brittle piece fall into her hand. "It has brittle book syndrome. It effectively has died. There is nothing we can do to bring this book back to life."

By the time books make it to Herrick's office, located in the preservation unit on the second floor of Olin Library, it is usually too late. Once material has become embrittled, the deterioration cannot be reversed or, in most cases, even slowed. Small piles of books — ancient hardcovers, crumbling textbooks, swollen paperbacks — await their fate on Herrick's crowded desk and bookshelves.

"Each brittle book is a difficult decision," Herrick said. "These books are gone. There is nothing we can do to bring them back. I and other librarians have to decide if it's worth the money to try to preserve them. Every decision is a judgment call. There is no hard and fast rule."

There are not enough resources to preserve every embrittled book in the University's collection, or to purchase duplicates of each book. In fact, 80 percent of the books in University Libraries are out of print and irreplaceable.

Scientists discover changes in emphysema-causing enzymes

Pulmonary physician Robert Senior, M.D., was among the first to identify the internal enemy — readers. As this is not a realistic situation, books made before 1840 do not have this problem, and usually are in better shape than those made in the late 1800s and 1900s. Until the Industrial Revolution, books were made from naturally non-acidic linen and cotton fibers. When books began to mass produced, publishers switched to the less expensive wood-based paper.

"The cost of mass production was that the paper was of much less durable quality," Herrick said. "That tang you smell when you cut a piece of wood, that's the acid. The seeds of destruction are in the books' own pages."

The solution

One solution is to house books in a stable environment. A book's ideal home would be on a steel shelf coated with baked enamel in a dark, insect-free room with less than 50 percent humidity, a temperature below 72 degrees, and few — if any — readers. As this is not a realistic library environment, preservation staff work to get as close to this ideal as possible.

"Books are hygroscopic and absorb water from the atmosphere. Paper can swell even if water doesn't touch it. In one library where I worked before coming here, the books were so swollen from high humidity levels they literally popped off the shelves," Herrick said.

In the University's 11 libraries, all books are stored upright on baked enamel shelving (wood shelving hosts the same acidic foes as paper). Areas are in the books' own pages."

In contrast to the Tonga earthquake, the earthquake that hit Kobe, Japan, Jan. 17, was centered on a fault about 12.5 miles beneath sea level. The Kobe event occurred in a population center of more than one million people, causing widespread destruction and more than 4,000 fatalities. Death is rare with large deep earthquakes because of the long distance the waves must travel to the surface.

Wiseman also is studying Tonga and Fiji earthquakes that are similar to the Kobe earthquake.

Plotting the seismic waves through computer analysis, Wiseman determined that the many aftershocks recorded five days after the Kobe earthquake, similar to the way aftershocks occur

Russian talk launches educational program for older Americans

Georgetown University Professor Richard Sites, Ph.D., will give a lecture titled "Russian Popular Culture: Looking at the People" Wednesday, Feb. 1. His talk, part of the Assembly Series, will be held at 11 a.m. in Graham Chapel. He also will participate in an informal discussion on the study of Russian popular culture from 2 to 3 p.m. Feb. 1 in Lambert Lounge, Room 303 Mallinckrodt Center. Both events are free and open to the public.

His Feb. 1 lecture kicks off a national educational program that gives older Americans a chance to explore the history, culture and customs of the people of Russia, said Max J. Olenius, Ph.D., associate professor of history in Arts and Sciences and program director. Sites, professor of history, visited the former U.S.S.R. 35 times. His extensive teaching assignments have taken him throughout Europe, Russia, Ukraine, the Baltic and the Caucasus, France, England and Germany. In addition to his many articles about Soviet and Russian culture, he has published the following books: "The Women's Liberation Movement in Russia," "Revolutionary Dreams: Islam, nihilism and Bolshevism, 1860-1930" (1978), "Revolutionary Dreams: Islam, nihilism and Bolshevism in the Russian Revolution" (1989) and

Continued on page 5

Continued on page 8
The science of touch

Researchers find changes in brain activity before anticipated stimulation

Investigators at the School of Medicine have found evidence suggesting that the human brain focuses attention on parts of the body where stimulation is expected by suppressing competing information from other areas of the body.

In the Jan. 19 issue of the journal Nature, the researchers report decreased blood flow in parts of the somatosensory cortex in response to anticipated stimulation of various parts of the body. Using Positron Emission Tomography (PET) imaging, the researchers studied a total of 37 subjects and found that anticipated stimulation of one part of the body will depress blood flow in areas of the cortex that sense stimulation in other parts of the body.

Single-cell experiments previously had shown that neurons would suppress activity in limited areas of the skin, but this is the first study to demonstrate that this occurs on such a broad scale in the brain’s somatosensory cortex. The work, which was funded by the National Institutes of Health and the Charles Dana Foundation, may have clinical implications in conditions such as stroke, chronic pain management and attention deficit disorder.

Co-investigator Harold Burton, Ph.D., professor of anatomy and neurobiology, said these findings have many important clinical implications in diseases where attention is important.

“In some stroke patients, for instance, there is evidence that attention can be disrupted,” Burton said. “If I want to do something with my right hand, then my brain shuts off some activity to my toes and my face. Many stroke patients cannot do that. They have difficulty shifting the focus of their attention.”

Drevets said people with ADD also may be unable to focus their attention using this mechanism. “There are also implications in chronic pain management where we teach people to focus on other activities. This could be the mechanism at work when the brain is able to suppress pain,” he said. — Tom Dryden

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Evers named head of anesthesiology

A lex S. Evers, M.D., has been named the Henry Eliot Mallinckrodt Professor and head of the Department of Anesthesiology at the School of Medicine.

The appointment was announced by William A. Peck, M.D., executive vice chancellor for medical affairs and dean of the medical school.

“Alex is an outstanding scientist and physician,” said Peck. “Under his leadership, the Department of Anesthesiology will excel both in patient care and as a leader in research.”

The Mallinckrodt Professorship in anesthesiology was established in 1948 by Mr. and Mrs. Edward Mallinckrodt Jr., in memory of their son, Henry Eliot. The chair most recently was occupied by William D. Owens, M.D., who stepped down to devote more time to research.

Evers, who also is a professor of internal medicine and of molecular biology and pharmacology, has served as acting head of the department since August. Prior to that, he was medical director of the surgical intensive care unit at Barnes Hospital and chair of anesthesiology at the Washington University Medical Center.

His work focuses on the molecular mechanisms through which anesthetics depress nervous system function. His other interests include volatile anesthetics — anesthetic gases inhaled at the time of surgery to make patients lose consciousness — focusing on the target molecules with which those anesthetics preferentially interact. Using labeling techniques, Evers has identified various proteins involved in those interactions as well as the structures.

Evers came to Washington University in 1983 following a fellowship in surgical intensive care at Massachusetts General Hospital.

He received a bachelor’s degree in biochemistry from Yale University in 1974 and a medical degree from the University of Illinois in 1978.
Washington People

Senior pinpoints emphysema catalyst

I

In the late 1960s, Robert Senior, M.D., treated a patient with emphysema, a profound impact on his career. The patient was a 23-year-old soldier who had been sent home from combat in Vietnam because of an acute lung problem thought to be asthma. Senior, then a physician at Walter Reed Army Medical Center in Washington, D.C., and his colleagues discovered that the man actually had emphysema, a debilitating disease that gradually destroys the lungs. It was a surprising finding because at the time, emphysema typically strikes people much later in life.

"This one patient got me interested in the question that has kept me going for most of my career: What are the biological processes that cause the destroyed lung that we see in emphysema and other lung diseases?" said Senior, now the Dorothy R. and Hubert C. Moog Professor of Pulmonary Disease at Washington University.

Emphysema affects an estimated 1.6 million Americans in the U.S., the progressive and irreversible destruction of elastic fibers in the lungs, which reduces elasticity of the lungs and makes breathing increasingly difficult over time. When Senior entered the field of pulmonary medicine in the late 60s, the cause of this destruction was unknown. He was among the first to begin pinpointing its source: tissue-eating enzymes that are released from certain blood cells.

Over the past 25 years, he has performed pioneering research to identify many of the enzymes that contribute to emphysema and explain other aspects of the disease process. "He has been at the forefront of this field since his earliest publications. His work has really ushered in the modern era of thinking regarding the cause of emphysema," said Edward Campbell, M.D., associate professor of medicine at Washington University and a former colleague of Senior's at Washington University.

An important clue to the cause of emphysema came from patients like Senior's young soldier. He was among the first to diagnose emphysema, which is currently in its 12th year. Senior and his colleagues found that nicotine could contribute to emphysema. They were among the first to begin pinpointing its source: tissue-eating enzymes that are released from certain blood cells.

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One of the most startling changes of the past few decades is the dramatic shift in attitudes about smoking. Senior said, "When I started practicing here, cigarettes were sold in the hospitals. There was absolutely no regulation on freedom of smoking," he recalled. "It is just incredible to me that we have reached the point today where it is banned from the hospital and many public places. I would never have predicted this would happen in my professional lifetime."

He tackled the job with two colleagues, both currently at Boston University. The American Journal of Respiratory Cell and Molecular Biology now is a highly cited publication.

Ironically, Senior was a "late bloomer" in choosing research as a career. He originally had no interest in research but had planned to be a physician since childhood. "It wasn't so much the science aspect of medicine that interested me. It was something about the practice of medicine - the chance to interact with people in a very significant way," he said. He earned his medical degree at George Washington University in 1961 and then came to Washington University to serve his internship and residency at Barnes Hospital and The Jewish Hospital of St. Louis.

Today Senior specializes in pulmonary medicine because he thought it was an underserved area. Then a fellow at Columbia University, Senior prompted his interest in the science behind medicine. The program there, to his surprise, was almost totally devoted to research. And, to his surprise, he enjoyed it. He became hooked on the idea of combining research and clinical care. After Columbia, he spent three years at Washington University and Army Medical Center as a researcher and clinician, and then came to Washington University.

Today Senior spends nearly half of his time on clinical duties. Part of that time is devoted to running Jewish Hospital's Respiratory and Critical Care Division, a job he has held for 25 years. He treats patients with a variety of lung conditions, including lung cancer, tuberculosis, pneumonia, pulmonary fibrosis, AIDS-related lung conditions and various forms of respiratory failure. He is ranked among the nation's best pulmonary physicians in a directory titled "The Best Doctors in America" and by Good Housekeeping.

The best part of being a physician is talking to patients, he said. "Obviously, it is tremendously satisfying to make the right diagnoses and to get patients on the right path to recovery. But what I enjoy immensely is sitting down and talking to patients, hearing their story and interacting with them."

Senior recently has taken on the role of student again by pursuing a master of liberal arts degree at University College. He has taken one course each semester for three years and is now halfway through."It's been a very enjoyable, interesting thing to do. I've always enjoyed subjects like literature and history - things that are nonscientific. And it's nice to meet other people who are doing totally different work," he said. His wife, Martha, and their four grown children have been very enthusiastic about his return to school, he added.

"I have enjoyed leading the "double life" of physician and scientist. I credit much of my success to the guidance he received from his colleague, Jack Pierce, M.D., and to the support of pulmonary physicians at the medical school and Barnes Hospital. I am also indebted to the Jewish Hospital. These institutions have provided an extremely supportive and nurturing environment for me," he said. "This career has been much more satisfying than I ever could have imagined it would be."
Friday, Jan. 27

Noon. Environmental engineering seminar.


Saturday, Jan. 28


11 a.m. Math colloquium. "Fixed Points of Functions Analytic on the Unit Disk," Carl Cowen, prof. of mathematics, U. of Louisville, Ind. Room 199 Cupples I Hall. (Repeats 4 p.m. in Room 200.)


6 p.m. Microbial pathogenesis seminar. "Limbic Forebrain Circuits for Stimulus Processing," PC. Hammel, staff member, Dept. of Microbiology. McMillen Lab.


"The Relation of Pinned Holes," PC. Hammel, staff member, Dept. of Microbiology. McMillen Lab.

Saturday, Feb. 4


Lectures

Thursday, Jan. 26

Noon. WU Student Pugwash USA talk. "In search of Labor Through NAFTA and GATT," Mike Oates, assistant professor, AILC of Missouri. Room 201 Eads Hall.


Noon. Left Forum meeting. "Adam Smith and Machiavel Go to Moscow" (Part 2), David Burke, chief resident, Dept. of Obstetrics and Gynecology. Room 311 McMullen Lab.


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Music

Saturday, Jan. 28
8 p.m. Dept. of Music concert. "Composers of the 20th Century: Music for Flutes," performed by Betsy Jofstedt and John Perkins. music prof. of music, of music, St. Louis University. Cost: $12 per person. 935-5581.

Sunday, Jan. 29

Saturday, Feb. 4
8 p.m. International Writers Center literary reading. David Bradley, author of "The Cheyenne Incident" and "South Street," will read from his works. West Campus Conference Center, 7425 Forsyth Blvd. Cost: $10 per senior citizens and students. 935-5576.

Thursday, Jan. 26

Tuesday, Jan. 31
8 p.m. International Writers Center literary reading. John Maxent, associate professor of English, will read selections for a 10-session discussion program will meet from 10:30 a.m. to noon on Fridays from March 3-24. To make the program available to a wider audience, cooperative programs were planned with other local institutions.

Swim teams make waves
Last week (men's): WU 146, Indianapolis 82; DePauw 135, WU 108; Washab 147, WU 97.

Women's
Last week (women's): WU 122, Indianapolis 117; DePauw 126, WU 116.

This week: 6 p.m. Friday and 11 a.m. Saturday.

 compiled by Mike Wolf, director, and David Moessner, asst. director, sports information.

Basketball, the stylized singing and dancing of Japanese drums, the evocative dance of Spanish Gypsies. Edison Theatre. Cost: $15. 935-6543.

Friday
8 p.m. Edison Theatre "OVATIONS!" series presents "Needle and Opium," conce- ced, written and directed by Robert Leyage and performed by Marc Labrecce. (Also Feb. 4 and 6.) Room 2812 Edison Theatre. Cost: $20 for the general public; $16 for senior citizens, WU faculty and staff; and $15 for WU stu- dents and children. 935-6543.

Saturday, Jan. 28

Sienrday, Jan. 29
3:30 p.m. Famous-Barr, the International Educa- tion School of Medicine. The local St. Louis and the Missouri Humanities Council.

...at Lockheed. For more information, call 935-6543.

American Indian artist Kevin Locke presents "Lakota Music, Dance and Oratory," a perform- ance of stories, flutes and song loops that brings to vibrant life the world of the Lakota Sioux, at 2:30 p.m. in Edison Theatre.

Kevin Locke
American Indian Studies at the George Warren Brown School of Social Work. The May Department Stores Co., BJC Health System and Washington Univer- sity School of Medicine. The local St. Louis program also is sponsored by Famous-Barr, the International Educa- tion Consortium, Jewish Hospital of St. Louis and the Missouri Humanities Council.

Isite's lecture is co-sponsored by Stites' union, the Russian Club and the departments of History, Political Science and Russian in Arts and Sciences. For more information about the Stites' lecture, call 935-5285.

Saturday experiments explores post-war America
P ostr war America is the subject of a series of seminars that will be held Saturday mornings in February. "A Back- word Glance: America After the War," will be the title of the 14th seminar in this year's "Saturday Seminars," weekly lectures by University faculty designed to explore a common theme from different perspectives and invite dialogue between audience and speaker. The lectures are free and open to the public and will be held at 11 a.m. in Room 301 McDonald Center. The series is based on the premise that the world changed dramatically after the defeat of the Axis powers in 1945. After a global struggle for liberation, violations of civil rights at home became increas- ingly unacceptable. International and domestic politics were redefined by Cold War myths and realities.

The first seminar, "The Legacy of the Bomb," will be led by Carl M. Bender, Ph.D., professor of physics in Arts and Sciences, and Paul G. Hellyer, Feb. 1. Helen Berger, Ph.D., associate professor of history in Arts and Sciences, will lead a seminar titled "1945-America and the World: Between War and Peace." Former U.S. ambassador to the United Nations, 11 a.m. Center for American Indian Studies at the George Washington University. The lecture will be held at 11 a.m. in Room 301 McDonald Center. The series is supported in part by the Center for American Indian culture.

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Science outreach program brings young orators to campus

University City High School students Eugenia Gibbons, 14, makes a point and Joe Killibrew, 14, observes during the "Battle of the Debaters" on campus.

Several tips for preserving private book collections

- Store books on steel shelving with a baked enamel finish. Wooden shelves will acidify and emblettle the collection. If wood shelves are used, a barrier of polyester film should be placed between the wood and the books.
- Maintain a temperature of 65-70 degrees Fahrenheit.
- Relative humidity should not exceed 50 percent.
- Do not store books in the basement or attic, where it is difficult to maintain constant conditions.
- Do not store books by a window. Sunlight's ultraviolet rays will degrade the inks and paper. Paper clips, bookmarks and other acidic materials will fade the dye of the bindings.
- Do not store books on a window ledge, near pipes, under a fish tank, or any other place where they could get wet. Water damage cannot be reversed and can result in complete destruction.
- If you must store books in boxes or cartons, make sure the material is acid-free.
- Do not put anything inside books. Newspapers will acidify the paper. Pressed flowers will destroy the inks and bindings. Use plastic clips, but marks and other items all do damage over time.
- Do not associate books.
- Do not attach Scotch tape, masking tape, or any other kind of adhesive to books.
- Treat books gently. Do not read books in the bathtub, while eating or while cooking. Do not show them lying face-down in an open position. Do not leave them on a radiator or window sill, nor should a dog or child get them. Do not put cups or glasses on top of books.
Soft soil underlies devastation of Kobe quake, says expert

Phillip L. Gould, Ph.D., professor and chair of civil engineering, specializes in earthquake engineering and is a board member of the Earthquake Engineering Research Institute based in Oakland.

Gould says the impact of earthquakes on buildings and structures is influenced by geological and technology transfer to reduce the impact of earthquakes. He comments below on Jan. 17 earthquake in Kobe, Japan.

One of the most obvious problems the Kobe earthquake illustrated, said Gould, is the impact of earthquakes on this magnitude of buildings and structures that sit on soft soils.

"The outcome of the Kobe earthquake will be a reconsideration of how earthquake effects are amplified on soft soils and filled-in soils," said Gould. "The Kobe earthquake and the 1989 Loma Prieta (Calif.) earthquake are very similar. They both showed that structures built on soft soils suffered significantly more damage than those built on harder soils, despite a similar distance between the earthquake's epicenter.

There are many places nationwide, including California, St. Louis and the Midwest, where structures built on soft and filled-in soils are vulnerable.

Gould recently learned that many older houses and residential apartment blocks, built before the 1981 seismic regulations, collapsed. On the other hand, similar structures built after 1981 survived for the most part.

Soft soils are found throughout the United States in river valleys, agricultural areas and near large bodies of water. Filled-in soils are common throughout parts of the United States, especially in areas such as the San Francisco Bay and the Chicago Lakefront, which are valuable for economic development.

Much of the Chicago Lakefront was built from rubble of the famed 1871 Chicago Fire, according to Gould. "In older cities along a bay, the soils have been filled in to make room for commercial and residential property. The buildings were repaired in with what was handy. In recent years, better engineering techniques have eliminated much of this problem.

Gould is overseeing a project for the Federal Emergency Management Agency's (FEMA) Office of Long Term that will provide national retrofitting standards for existing structures. Except for a few earthquakes in the San Francisco Bay, Calif., there are no mandated retrofitting requirements for buildings anywhere in the country.

In the next few to 15 years, mandated retrofitting requirements will be added to many of these structures, like schools and hospitals. We're now developing standards to do this economically."

Alumnius elected to Board of Trustees

Washington University alumni

Donald P. Gallop, chair of the Gallop, Johnson and Neuman law firm in St. Louis, has been elected to a four-year term on the Board of Trustees. Gallop received a law degree from the University in 1959. In addition to his role as an associate professor of legal studies, Gallop is also a member of the St. Louis Board of Aldermen.

Daniel W. Owens, M.D., professor of anesthesiology, was elected to the Anesthesiology Foundation's board of directors.

Richard Lazarus, J.D., professor of law, was named to the Environmental Law and Policy Center's board of directors. The center, which is based in Chicago, is the first national environmental public interest law group based in the Midwest. In addition, Lazarus was appointed to the World Wildlife Fund's national council.

For The Record contains news about a wide variety of faculty, staff and student scholarly and professional activities.

**Of note**

Mark A. Franklin, Ph.D., professor of electrical engineering, and Barry R. Spielman, Ph.D., professor and chair of electrical engineering, have been elected fellows of the Institute of Electrical and Electronics Engineers.

Dale Sanders, a professor in chemical engineering, and Benjamin W. Verdinne, a senior biology major, were inducted into the St. Louis National Honor Society's Washington University chapter. Sanders, an academic honors organization, seeks to unite diverse individuals while nurturing and rewarding the academic accomplishments of top students in all disciplines.

Bruce W. Thompson, director of protective services at the School of Medicine, was named the 1994 Healthcare Professional of the Year by the Greater St. Louis Healthcare Protection Association.

SPEAKING OF


At the National Association of Biology Teachers' annual convention in St. Louis, Richard W. Coles, Ph.D., adjunct professor of biology and director of the Science Research Center, spoke on "Deleterious Nectotopical Mutations in Mice in St. Louis and in Venezuela."

David L. Elliott, Ph.D., professor emeritus of systemics science and mathematics, lectured on "Reconstruction of Nonlinear Systems Using Delay Lines and Feedforward Networks" at the Du Pont Experimental Station in Wilmington, Del., the Institute for Systems Research at the University of Maryland in College Park and the New Jersey Institute of Technology in Newark.

During the National Association of Biology Teachers' annual convention in St. Louis, Susan A. Gieckeneber, a genetic counselor and professor of genetics, delivered a presentation titled "Genetics in Real Life: Genetic Counselors and the Impact of Genetics on Families."

Daniel Kostas, M.D., associate dean and professor of law, spoke on bankruptcy and employment issues during the 13th annual Bankruptcy Conference sponsored by the American Bankruptcy Institute.

Mary K. Migonec, O.D., clinical instructor of ophthalmology, presented a poster on "Attitudes of Successful Contact Lens Wears Toward Refractive Surgery" at the Academy of Ophthalmology's annual meeting in San Diego.

John C. Morris, M.D., associate professor of neurology, delivered a presentation titled "Medical Update on Alzheimer's Disease" at the Deaconess Health Center in St. Louis. In addition, during the Conference on the Therapeutics of Alzheimer's Disease, he presented a poster session titled "Assessment of Progression" at the Symposium on Le Devepment on Neuroprotective Drugs."

Jay F. Pecirillo, M.D., assistant professor of otolaryngology and director of the Clinical Outcomes Research Office, was a panelist during the annual meeting of the American Rhinologic Society titled "Healthcare Crisis -- The Evolving Role of Outcomes Research in Head and Neck Cancer.

At the Midwest Clinical Teachers Conference sponsored by the State Board of Education of the State of Kansas School of Law in Lawrence, Jean Sowitt, J.D., associate professor of law, was a panelist during the general session on "Educating Students With Special Needs."

She discussed challenges and opportunities in the clinical setting when students have learning or other disabilities.

ON ASSIGNMENT

Linda M. Davidson, assistant business manager at the School of Medicine's Mallinckrodt Institute of Radiology, was appointed to the Healthcare Financial Management Association's board of directors.

Richard Lazarus, J.D., professor of law, was named to the Environmental Law and Policy Center's board of directors.

Peter H. Reeves, Ph.D., Engelmann Professor of Botany, also is a member of the council.

The Central Association of College and University Business Officers appointed David Nolan, associate director of housing, to its St. Louis Professional Development Workshop Committee.

Barry E. Owens, M.D., professor of anesthesiology, was elected to the Anesthesiology Foundation's board of directors.

The foundation provides financial aid for house staff in anesthesiology.

Lee Rainer, M.D., Ph.D., professor of medicine and of molecular microbiology, was chosen by the National Institutes of Health (NIH) to chair its AIDS and Related Research Study Section 3, Division of Research Grants. The study section reviews grants submitted to the NIH to determine their merit for funding. He will serve a two-year term. Rainer also received a $988,750 three-year grant from the National Heart, Lung and Blood Institute for a project titled "Viral Determinants of HIV-Associated Thromboctopenia."

To press

Mary-Jean Coeull, Ph.D., associate professor of performing arts and coordinator of the dance program, published an essay titled "East and West in the Work of Michio Ito" in the fall 1994 issue of the Dance Research Journal.

along a fault plane like the famed San Andreas Fault in California.

"For a long time, scientists have won- dered what a deep earthquake looked like," Wiens said. "It's roughly the same sort of behavior found along the San Andreas Fault. The aftershocks tend to line up along the fault itself, with an overall main shock happened." Wiens and a team of geologists determined that the plane deep within the Earth is about 35 miles wide, much wider than the zone most seismologists believe produces deep earthquakes. The most popular theory of what causes such earthquakes is called transformational faulting, a thin zone of mineral no wider than 15 to 20 miles undergoes transformation from one type of crystal to another. The same carbon can be transformed to diamond by applying pressure.

"It is possible that at least some of the aftershocks occur well outside of the width of what some scientists consider the main fault," Wiens said. "That means people either are going to have to re-define the boundaries on what causes an earthquake or at least reconsider how wide the zone is that produces the earthquakes." Wiens gave an invited paper on his results at the annual fall meeting of the American Geophysical Union in San Francisco Dec. 8. His results are published in the Dec. 8 issue of Nature.

Since the 1930s there has been a lively debate over the size of the region that actually causes deep earthquakes. In addition to the transformational faulting idea, other theories suggest that deep earthquakes occur because of loss of water from reaction with rocks in the Earth's mantle. Wiens said, "That means we either are going to have to redefine what causes an earthquake or at least reconsider how wide the zone is that produces the earthquakes." Wiens gave an invited paper on his results at the annual fall meeting of the American Geophysical Union in San Francisco Dec. 8. His results are published in the Dec. 8 issue of Nature.

Answering employee questions concerning the Washington University community

University exceeds United Way campaign goal

Washington University's annual United Way Campaign has exceeded its 1994 goal for the second year in a row.

"We are very pleased to have sur- passed our goal," said Franklin. "It would be very difficult to be satisfied with any other outcome." Franklin noted, "Throughout the history of seismol- ogy, there never has been a deep earthquake with so many aftershocks. We have to look at why this particular earthquake has so many aftershocks. There is something that we don't understand about deep earthquakes that led to this kind of behavior." An even larger deep earthquake (8.3 on the Richter scale) than the Tonga event occurred June 9, 1994, in Bolivia. Seismograms recorded a total of 36 aftershocks from the event—just one registering higher than 5.0, in contrast to the 600-odd aftershocks recorded 11 aftershocks greater than 5.0 from the Tonga earthquake prior to the Bolivian event happened July 31, 1970, in Columbia. No one was injured in that event.

"It may be that the Tonga event, which has so many aftershocks and Columbia events, which are deficient in aftershocks, represent two totally different types of deep earthquakes," Wiens and his colleagues are still analyzing aftershocks from the Tonga earthquake. They now have 11 seismograms deployed on islands throughout the Pacific Ocean and on the floor at sites throughout the southwest Pacific to gather even more data about deep Earth structure and seismicity in the region. - Tony Filipczak