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Record

WASHINGTON
UNIVERSITY
IN ST. LOUIS

Vol. 17 No. 9 Oct. 29, 1992



Firefighter/paramedic Douglas D. Myers of the Clayton Fire District shows children at the Washington University Nursery School a real firetruck. They eventually were given a chance to sit inside the truck. During the firefighter's visit, the children also learned how to stop, drop and roll in case of fire. The firefighters visit the school every year in October as part of National Fire Prevention Week.

Wyssession receives five-year, \$500,000 Packard fellowship

Michael E. Wyssession, Ph.D., assistant professor of earth and planetary sciences, has received a five-year, \$500,000 fellowship in science and engineering from the David and Lucile Packard Foundation.

Wyssession is the first Washington University scientist to receive a Packard Fellowship since the program began in 1988. Each year Washington University is asked to nominate two faculty members. Wyssession was chosen along with 19 other nominees for the fellowships out of a pool of 101 nominations from universities nationwide. He will receive \$100,000 annually in four quarterly payments for the next five years. Stipulations on his use of the fellowship are minimal. Fellows are required to write a one-page report of accomplishments each year.

Wyssession, a seismologist whose research emphasis is earthquake seismology and earth structure, plans to use the fellowship money for researching deep seismic waves with seismometers across the United States, among other seismological projects. He will collaborate with colleague Douglas A. Wiens, Ph.D., associate professor of earth and planetary sciences. He also plans to use the fellowship to purchase high-speed computers for his research and to fund more graduate and postdoctoral geophysics students at Washington University.

The David and Lucile Packard Foundation, founded in 1964, established the David and Lucile Packard Fellowships in Science and Engineering to strengthen both university-based research and graduate education for the benefit of the country. The foundation launched the program in the hope that it will persuade exceptional scientists and engineers to remain within academia to conduct basic research and to teach the next generation of scientific leaders.

Do neutrinos have mass? Scientists move closer to answer

A multidisciplinary team of Washington University researchers has shed light on what may be the hottest question in physics today: Do neutrinos have mass?

In a study of the element tellurium that determined the decay lifetimes of two of its isotopes, the researchers give theoreticians one of the most stringent limits yet on the mass of the electron neutrino produced in the decay. At the same time, they have broken the record for the longest radioactive lifetime ever measured.

Thomas Bernatowicz, Ph.D., research associate professor of physics, and Ramanath Cowsik, Ph.D., distinguished visiting professor of physics, led the team of six, which included researchers from the University's Department of Physics and Department of Earth and Planetary Sciences. The researchers, all members of the

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Paying the price

Women economically penalized for having children, Ozawa says

As more women join the labor force — about a million a year since 1950 — the economic trade-off between career and children is becoming increasingly important. To see what price women pay for combining children and a career, Martha N. Ozawa, Ph.D., the Bettie Bofinger Brown Professor of Social Policy, examined the earnings' history of some 700,000 American women. Her finding: The more children a woman has, particularly a white woman, the less she'll earn over the course of her lifetime.

"The bottom line," says Ozawa, "is that women, not men, are economically penalized for having children."

While Ozawa's research found that children have a negative effect on a woman's lifetime earnings, her study also found that education has a positive effect, particularly for a black woman. In fact, her study found that a college-educated black

woman earns 10 percent more than her white counterpart.

Ozawa, an expert on income maintenance and other economic concerns of women, will report her findings in an upcoming issue of *Social Work Research & Abstracts*. The study is titled "The Effects of Children and Education on Women's Earnings' History."

Ozawa's research traced the working lives of all American women who had ever been married and who had retired between mid-1980 and mid-1981. Her detailed investigation was possible because the Social Security Administration, for the first time in its history, made public in 1990 information regarding the annual earnings of workers receiving Social Security.

'Breakthrough issue'

Ozawa argues that before women can earn equal pay for equal work, the effect of

children on women's earnings must be neutralized. "It's the ultimate breakthrough issue women face in overcoming pay disparity," she says. Traditionally, economists have ignored the effect of children on women's earnings because childrearing and working outside the home were both considered matters of choice. But choice is no longer a factor in most women's decision to work outside the home. Ozawa points out that income from wives' earnings allows some eight million American families to stay above the poverty line, and that without these earnings, the poverty rate of American families would double.

One reason women with children earn less is because they take time out to have children at a time when men and childless women are investing heavily in their careers. "It's not the income loss during leave," says Ozawa. "It's the fact that it all happens at such a crucial time. Other workers are increasing their per-hour wage rate, getting job training and generally improving themselves, career-wise."

Ozawa found that the average annual

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TB testing offered to employees and students

An employee of the linen room, located in the basement of Lee Hall, was diagnosed in late August with possible tuberculosis. This employee, who notified the University, immediately stopped working and was treated by a private physician. The employee is no longer contagious and has returned to work.

Tuberculosis (TB) is a communicable disease caused by bacteria that are usually spread from person to person through the air. Since the infected employee notified the University of the diagnosis, housing, residential life, and maintenance employees, and student workers on the South Forty

campus who may have been in contact with the source have been offered a tuberculin skin test by the University Health Service.

A negative test indicates no infection. A positive test generally indicates that the immune system has been stimulated by the bacteria for tuberculosis at some time in the past. A positive test does not mean active disease. In fact, an estimated 10 million Americans test positive.

Of the 52 who chose to be tested, four showed positive skin test results and were referred to Barnes Hospital for chest X-rays. None showed evidence of active

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In the news: More than 120 faculty members receive promotions *Page 6*

Medical Update

Prostate cancer formula assesses need for repeated biopsies

Researchers at the School of Medicine have developed a formula designed to boost the diagnostic power of the PSA blood test, the most sensitive screening tool available for prostate cancer. The "PSA Density" formula may help physicians decide how aggressively to re-biopsy men who end up in diagnostic limbo — men whose PSA tests identify them as cancer candidates but whose biopsies do not detect cancer.

PSA Density indicates the likelihood that a negative biopsy actually missed a cancer. It promises to be a valuable tool in preventing unnecessary follow-up biopsies, the researchers say. Their work was presented at the 1992 annual meeting of the American Urological Association, held last May in Washington, D.C. The investigators are preparing to submit their data for publication.

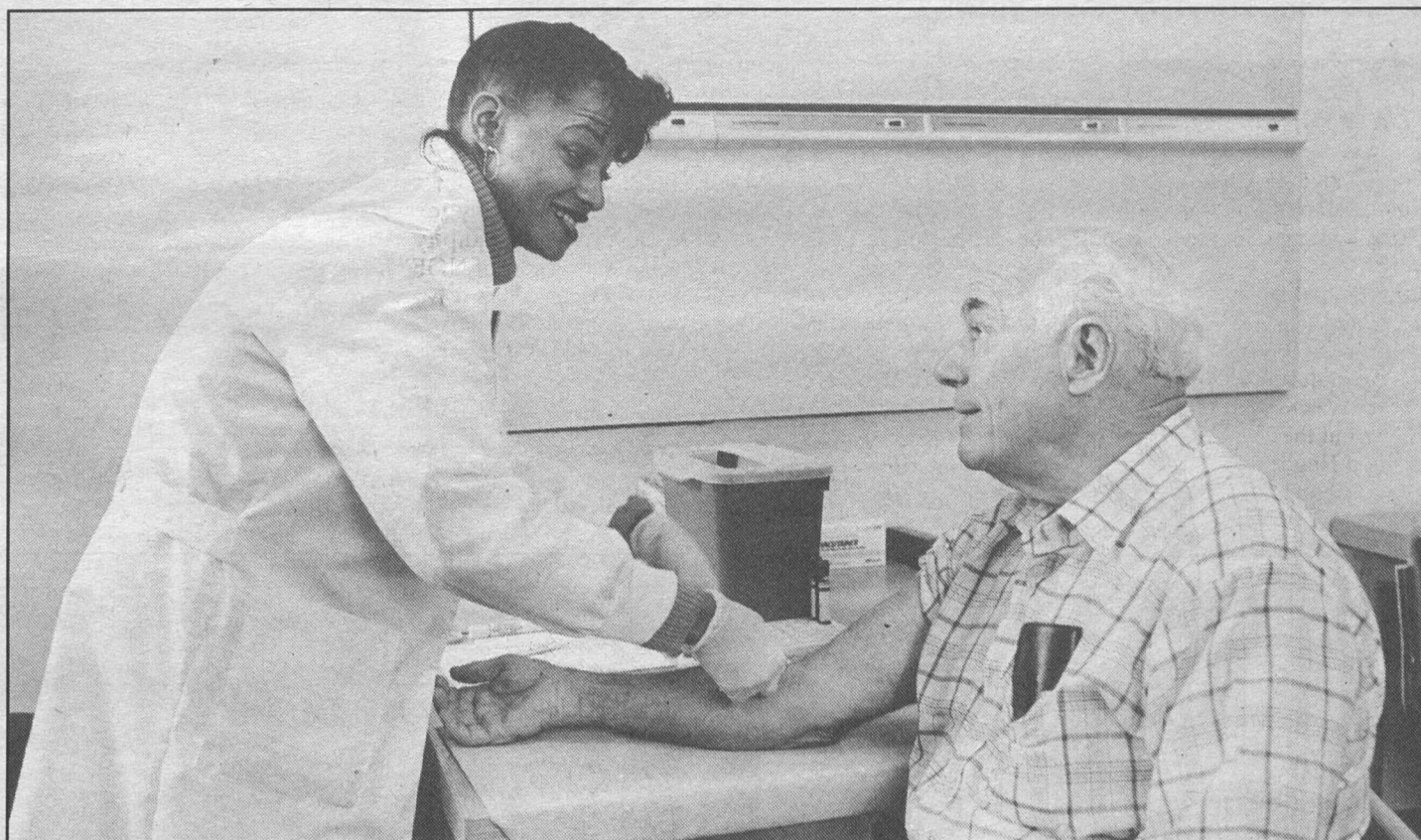
The PSA test is a simple blood test used to detect prostate cancer, the second-leading cause of cancer deaths in American men. The test measures the level of a protein called prostate-specific antigen (PSA), produced only in the walnut-shaped prostate gland. PSA is a component of semen that thins the liquid to help sperm swim through it. Above-normal levels are an indication of prostate disease, says principal investigator Gerald L. Andriole, M.D., associate professor of urologic surgery at the School of Medicine.

But the PSA blood test is not foolproof; not every man with elevated PSA has cancer, Andriole says. High levels of the protein also can be a sign of benign enlargement of the prostate. Physicians rely on biopsies to tell the difference. They recommend biopsies for patients with PSA values of four micrograms per liter or higher, Andriole says.

"If PSA levels are elevated, we often recommend having a prostate gland biopsy," Andriole says. "What we find is that two-thirds of the biopsies do not show cancer. Then we're faced with a dilemma: Is there no cancer, or did we just miss it?"

Biopsies can fail to detect cancer because they are limited to testing only a tiny portion of the organ suspected to be in trouble, he explains. A small sample is removed from the organ, then magnified and examined for the presence of malignant cells. But that sample does not always reflect the health of the whole organ. "If the cancer is very small and the prostate is very large, it's easy to imagine that the needle might not find the cancer," he says.

Because of the possibility of undetected cancer, some men are caught in an unpleasant cycle; they must repeat the uncomfort-



Yavette Brown, left, registered medical assistant, takes a blood sample from Randall Meesey to conduct a PSA test.

able biopsy procedure every six months as long as their PSA levels remain high. Some have as many as six over time, Andriole says. He and his colleagues developed PSA Density to try to break this cycle.

PSA Density relates a man's PSA blood level to the size of his prostate. Because PSA is produced by the epithelial cells that line the prostate gland, a larger prostate is likely to produce a higher amount of the protein. The logic behind PSA Density is that a high PSA value produced by a large prostate should be less worrisome than the same PSA value coming from a small prostate, Andriole says. Density is determined by dividing the serum PSA level by the size of the man's prostate. For example, if serum PSA is six and the prostate size is 100 cubic centimeters, the PSA Density is .06.

Andriole and his colleagues studied 302 men with persistently elevated PSA levels who had biopsies every six months. They found that of the men with a density greater than .15, half (49 out of 99) were found to have cancer. Of the men with a density between .1 and .15, about 20 percent (20 of 97) had cancer; only 14 percent of men with a density less than .1 had cancer (15 of 106).

The serum PSA levels for men diagnosed with cancer were not significantly different

from levels of men without cancer, Andriole said. The PSA Density is what sets the patients apart. "The appropriate follow-up of men with persistently elevated PSA levels whose biopsies are negative is a common clinical concern," says Andriole. "These data suggest that PSA Density may be a valuable tool in helping to determine how aggressively to re-biopsy."

For example, if density is low, a physician might have the patient wait a year or two for another biopsy, Andriole says. But a higher density warrants closer attention. Currently, Andriole recommends that patients with densities of .15 or more repeat their biopsies in six months. In addition to helping physicians, the PSA Density can alleviate worry, cost, discomfort and inconvenience for the patient, he adds.

Strikes one in 11 men

Prostate cancer kills 34,000 American men a year, second only to lung cancer. The American Cancer Society estimates that one in 11 men will develop the disease; 132,000 new cases are diagnosed every year. Although there are warning signs such as difficult, painful or frequent urination, a large percentage of men do not experience symptoms at all. The risk begins at age 50.

The PSA test was introduced as an effective screening tool for prostate cancer in an April 1991 study by Washington University's William J. Catalona, M.D., head of urologic surgery and professor of urology. His study of nearly 2,000 patients concluded that the PSA test was the most accurate single method for detecting prostate cancer. Using it with the digital rectal exam — the traditional cornerstone of diagnosis — provided the most accurate results. PSA has since been shown to uncover about 30 percent more prostate cancers than the digital exam alone, and to spot the cancers at earlier stages. It is now widely available around the country.

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 **Washington**
WASHINGTON UNIVERSITY IN ST. LOUIS

News In Brief

Biomedical research program offered for minority students

The National Institute of Allergy and Infectious Diseases (NIAID) is offering an Introduction to Biomedical Research Program for minority students who are in their junior or senior year of college or their first year of graduate or medical school.

Approximately 55 students will be selected for the Feb. 7 to 11, 1993, program, which is designed to acquaint academically qualified minority students with career opportunities in biomedical research. Participants will attend a series of lectures by National Institutes of Health (NIH) scientists and tour the renowned NIH Clinical Center, one of the world's largest research hospitals.

Students will have the opportunity to discuss current research initiatives and advances with scientists, and talk about career concerns. They also will be able to apply for summer positions in the NIAID Division of Intramural Research. Round-trip transportation and expenses will be provided to all participants.

Applicants must have a 3.0 or higher grade point average and be recommended by the deans and faculty members of their schools. Selection will be based on recommendations and the students' personal and academic achievement.

To receive an application packet write: NIAID, 9000 Rockville Pike, Building 31, Room 7A19, Bethesda, MD 20892, or call (301) 496-4846. Completed packets must be received at NIAID by Nov. 13. Applicants will be notified by letter after Dec. 10.

Study volunteers needed

School of Medicine researchers need volunteers to participate in a 13-week clinical study of a new drug to treat depression.

The drug, sertraline or Zoloft, is produced by Pfizer Pharmaceutical Inc., and has been approved by the U.S. Food and Drug Administration. It will be studied for its safety and effectiveness in treating depressed persons age 60 and over, and also will be compared to the drug fluoxetine, otherwise known as Prozac. Raj Nakra, M.D., assistant clinical professor of psychiatry, is conducting the study.

Volunteers will be seen weekly and will have the option of remaining in the study for an additional three months if they show improvement. Medication, blood tests and electrocardiograms will be provided at no cost.

For more information, call Paula Leotta, research coordinator, at 362-2432.

Washington People

Viktor Hamburger: Still a student at 92

What has always impressed Viktor Hamburger's friends and co-workers is not the 92-year-old's groundbreaking work in experimental embryology, his stature as an educator, or even the Nobel Prize to which he guided proteges Rita Levi-Montalcini and Stanley Cohen. It's the way his mind works, moving easily from the precision and logic required in the laboratory to the esthetics of expressionist art, from the politics of running a university department to his mastery of the English language.

"An enduring image I have of him," says Max Cowan, former Washington University provost and now science director at the Howard Hughes Medical Foundation, "is at a Saturday morning seminar series. He always sat in the front row and took notes and asked questions, but never to show how much he knew about the subject. He was as willing to learn from a new graduate student as he was from the most distinguished master, even into his 70s. Viktor has never ceased to be a student."

The Edward Mallinckrodt Distinguished Professor Emeritus of biology is still learning. He keeps regular office hours to write down recollections of his work or check in with the medical school for the latest in molecular biology, the grandchild of his own work.

Hamburger was born in 1900 in Silesia, now a part of Poland, and studied at several German universities before moving to Freiburg, near the Black Forest. In 1920 at the University of Freiburg, he became a student of Hans Spemann, who won a Nobel Prize in 1935 for his work on embryonic development. Hamburger accepted a Rockefeller Foundation fellowship at the University of Chicago in 1932, and adapting Spemann's methods to the study of chick embryos, he successfully removed and transplanted limb buds as a means of studying the relationship between nerves and limb development.

Word came from Nazi Germany not to return, and in 1935 he joined Washington University as an assistant professor in the zoology department. He served as department chair from 1941 to 1966.

During this time he continued to investigate the interaction of the nervous system and limbs in chick embryos. "Some researchers thought that a limb could not develop in the absence of innervation," Hamburger says. "I showed that it could. Then I asked the reverse: Does the limb have an influence on its own innervation?" He looked at developing chicks and saw that when a limb was removed, the nerve cells in the spinal cord that would have stimulated the amputated limb were absent. Hamburger concluded that the missing limb would have ordinarily signaled the spinal cord to produce the necessary motor neurons, but its absence stopped this production.

Working independently, Italian scientist Rita Levi-Montalcini repeated the limb ablation experiment and reached a different, and ultimately correct, conclusion. She counted the nerve cells and determined that the embryo continued to produce them even after a limb was amputated, but that those intended for that limb did not stay alive. Hearing of her work, Hamburger invited her to come to Washington University and continue the research. Ultimately, with the aid of biochemist Stanley Cohen, she went on to isolate and identify the chemical that kept these motor neurons alive: Nerve Growth Factor (NGF).

That coup brought her and Cohen the Nobel Prize in 1986, but the selection committee chose to overlook Hamburger's contribution to the discovery. Friends say the neglect must have smarted, but that the real reason for the oversight was not a fault with Hamburger's science but a result of his disdain for the lobbying some nominees do to advance their own causes. Hamburger's own comments on

the subject are simply, "Most of my American colleagues think I should have received it, but I have never lost sleep over it. I know exactly what I contributed."

What he did bring to the table was a sense of vision about the project and a talent for networking within the scientific community. Hamburger prefers to chalk up much of his success to serendipity, though. "Rita was the actual, specific discoverer of NGF," he says, "but it took a biochemist to discover that it was a protein. We were extremely lucky to find Stanley Cohen at the right time, and he turned out to be ingenious. We needed to work with homogeneous tissue, from which Stan could extract the active agent, and we followed the lead of a former

That imagination had been cultivated in the European university tradition, mixing science with the humanities, and laboratory work with excursions into fields and streams. Stimulated always to pursue a variety of intellectual interest, Hamburger moved in the 1950s from NGF to a very different field: development of behavior. The school of "behaviorists" dominated at the time, arguing that all behavior, down to the most basic bodily movements, or motility, was learned.

"The area of embryonic motility was very controversial then, so nobody wanted to touch it," Hamburger says. "I had been interested in behavior all my life, so I decided to make a very systematic study of motility in chick

embryos from start to hatching. I worked for 10 years and collaborated with five or six young people, some of whom knew electrophysiology, and found that electrical currents in the spinal cord give rise to movements with no stimulation from the outside."

Besides disproving conclusively the behaviorist theory, Hamburger, in collaboration with Ron Oppenheim, was the first to produce a detailed description of the hatching process. His conclusions about motility were so definitive that they were accepted as also true for all mammals. "My experiments are not even quoted anymore," he says with a smile. "That can be either a sign of complete failure for a scientist, or a sign of complete acceptance."

During this time, Hamburger carried a full teaching load, both lectures and lab sessions. He was the first to offer a university class in experimental embryology and wrote a textbook on the subject that is a model of clarity.

"Because of his own education in Germany," Cowan adds, "Viktor refused to confine himself to any one box, like zoology, but had friends in the German department, in humanities, English and history. His home was a meeting place for philosophers and artists. He was the strongest scientific proponent of the humanities at the University."

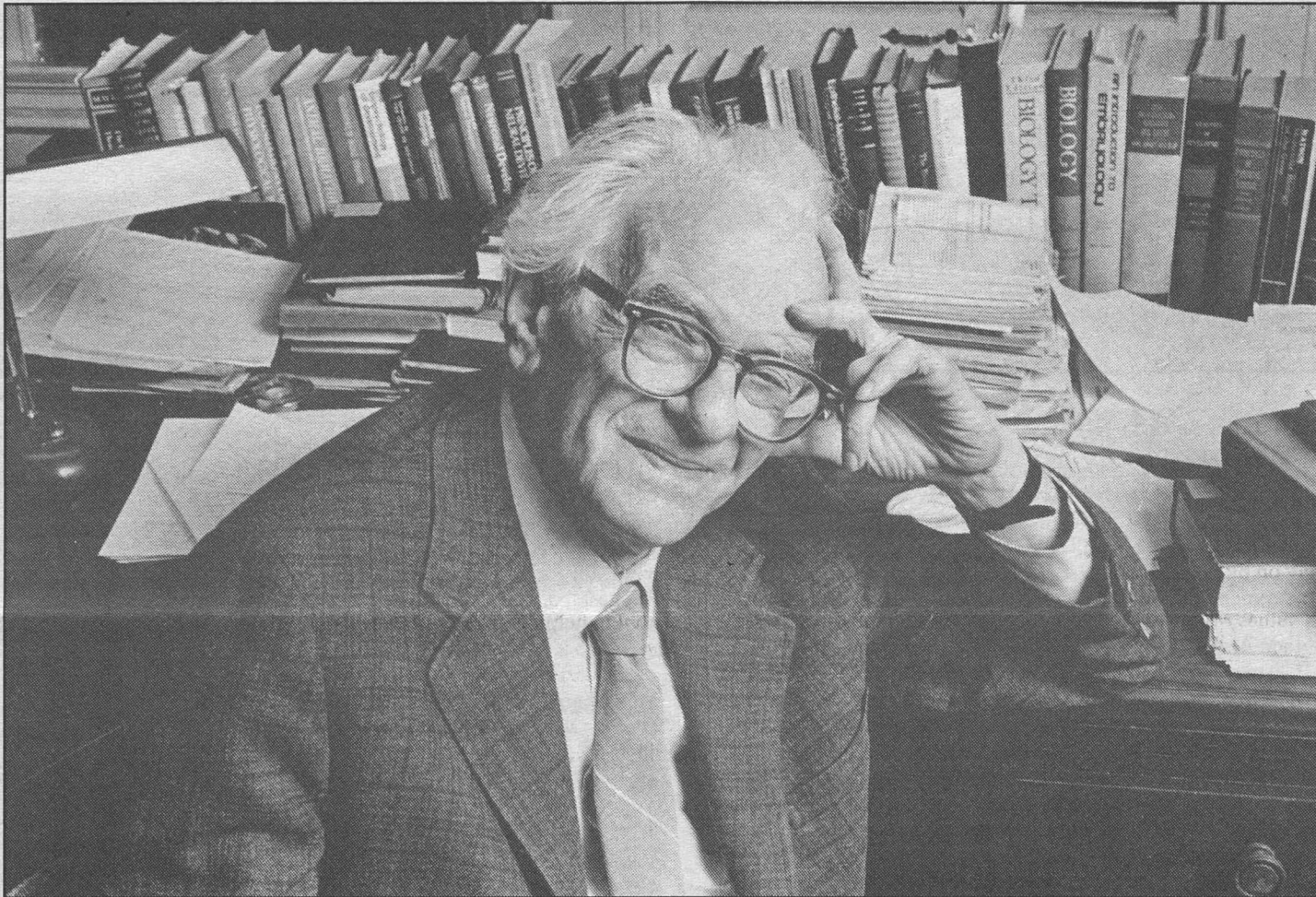
"As a department head, he was an astute politician. Not for himself, but he could identify someone who would be good for the University, plant a seed where it would grow, and that person would wind up with the job. He is a very generous colleague, always interested in others."

Hamburger retired from teaching and the lab when he was well into his 80s. As embryology moved away from the whole organism approach and toward the molecular level, he saw his role changing to one of advising younger scientists not to forget about the forest in their quest for trees. "Molecular biologists were making great strides," he says, "but they didn't know much about the early work." In his 1988 book, *The Heritage of Experimental Embryology... Hans Spemann and the Organizer*, Hamburger says his goal was to "describe what questions were raised early on and tell how they were answered, to state who worked on what and what questions remain."

The book has sold some 1,700 copies and is still in print. That's a tribute, says Oppenheimer, who read the manuscript before it went to press, to his clear writing style and talent for organizing and expressing his thoughts.

It's also a sign of Hamburger's success in bridging the gap between embryology's beginnings and the work going on today. "Viktor's position spans the century," Max Cowan says. "He represented the best of the European tradition of experimental embryology, training under Hans Spemann, the doyen of German experimental embryology and himself close to the founders of that science. Viktor has a wonderful feel for the whole sweep of the field as it emerged, and has been himself one of its central players."

—Maura J. Mackowski



"Most of my American colleagues think I should have received it (the Nobel Prize), but I have never lost sleep over it. I know exactly what I contributed."

student of mine who had found that a mouse sarcoma would grow in a chick embryo, and promote the growth of certain nerve cells.

"One of the most improbable discoveries," he continues, "was that the tumor and salivary glands were so effective in nerve growth. Cohen asked Arthur Kornberg, now at Stanford University, how to separate proteins from nucleic acids and he suggested snake venom, which inactivates the nucleic acids. He tried it and it turned out to give spectacular results with ganglia. Snake venom, produced by the salivary glands is very expensive, though, so we tried mouse salivary glands. We found they were many times as concentrated a source of the agent as the snakes. It was an amazing combination of scientific reasoning and good luck."

Jane Oppenheimer, emeritus professor of biology at Bryn Mawr College, has known Hamburger since the 1930s. She calls the whole NGF project a lot more than good luck. "When Viktor and Rita had different results, he suggested that she come to his laboratory and that they work it out together," she says. "That's the way science ought to work."

"Also, his whole approach was very logical. He has always had a very strong logical trend, but been imaginative. Viktor could always see how one experiment led to another."

Calendar

Oct. 29–Nov. 7


Lectures

Thursday, Oct. 29

Noon. Genetics Seminar, "Developing a Genetic System for *Toxoplasma*," David Sibley, asst. prof., WU Dept. of Molecular Microbiology. Room 816 McDonnell Medical Sciences Bldg.

Noon. Molecular Biology and Pharmacology Seminar with James Ferrendelli, prof., WU Dept. of Molecular Biology and Pharmacology. Room 3907 South Bldg.

2 p.m. Molecular Cell Biology and Biochemistry Program Thesis Defense, "The Use of Mutant and Chimeric Mice in the Study of Gut Epithelial Biology," Rebecca Green, WU doctoral student. Room 3907 South Bldg.

2:30 p.m. Dept. of Mechanical Engineering and Center for Computational Mechanics Seminar, "High-order Adaptive Methods for Time-dependent Problems," Joseph Flaherty, prof., Rensselaer Polytechnic Institute, New York. Room 100 Cupples II Hall.

4 p.m. Division of Biology and Biomedical Sciences Student-organized Seminar, "The Biochemical and Cellular Basis of Protein Antigen Recognition by the Immune System," Emil Unanue, Edward Mallinckrodt Professor and head, WU Dept. of Pathology. Erlanger Aud., McDonnell Bldg.

4:15 p.m. Dept. of Philosophy Colloquium, "Associative Learning in a Hostile World," Andy Clark, senior lecturer in philosophy, U. of Sussex. Women's Bldg Lounge.

Friday, Oct. 30

8 a.m. Dept. of Pathology and Laboratory Medicine Special Seminar, "A Rationale Method for Gene Transfer Into Skeletal Tissues," Jeffrey Bonadio, U. of Michigan Medical Center, Ann Arbor. Stix Room, Jewish Hospital.

9:15 a.m. Pediatric Grand Rounds Seminar, "Neurological Care of Physical Disability: Rational Use of Medication and Therapy," Michael Noetzel, assoc. prof., departments of pediatrics and neurology, WU School of Medicine; medical director, Therapy Services, St. Louis Children's Hospital. Clopton Aud., 4950 Children's Place.

10 a.m. Molecular Cell Biology and Biochemistry Program Thesis Defense, "Cloning of the Human Phosphatidylinositol 4-Kinase cDNA," Gwendolyn Spizz, WU graduate student. Room 521 Medical Library.

Noon. Dept. of Cell Biology and Physiology Seminar, "Roles for the Integrin Alpha 4 Beta 1 and its Counter Receptor VCAM-1 in Development," Douglas Dean, asst. prof., Respiratory and Critical Care Division, WU Dept. of Medicine. Room 423 McDonnell Bldg.

Noon. Molecular Microbiology Seminar, "Replication Initiation and Termination in Human Ribosomal RNA Genes," Randall Little, Albert Einstein College of Medicine, Bronx, N.Y. Room 816 McDonnell Bldg.

Noon. WU Center for Interreligious Dialogue on Pacifism and Quietism, "Religious Pacifism and the Secular State," Edward McGlynn Gaffney, dean, Valparaiso University School of Law. Women's Bldg. Lounge.

4 p.m. Division of Hematology-Oncology 1992 Carl V. Moore Lecture, "Unraveling the Circuitry of Immune Recognition," Roger Perlmutter, prof. and chairman,

Dept. of Immunology, U. of Washington School of Medicine, Howard Hughes Medical Institute, Seattle. Carl V. Moore Aud., 4580 Scott Ave.

Monday, Nov. 2

4 p.m. Dept. of Biology Seminar, "Molecular Biochemistry of Pigment-Protein Complexes in Thylakoid Membrane," Himadri Pakrasi, asst. prof., WU Dept. of Biology. Room 322 Rebstock Hall.

4 p.m. Graduate Program in Immunology Seminar, "Organ Specialization in Immunity," Thomas Ferguson, asst. prof., WU Dept. of Ophthalmology Third Floor Aud., Children's Hospital.

8 p.m. School of Architecture Monday Night Lecture Series, "The Lessons of the Berlin International Building Exposition," Peter Blake, artist and educator; WU visiting prof., Steinberg Hall Aud.

Tuesday, Nov. 3

12:15 p.m. Program in Physical Therapy Brown Bag Research Seminar, "How the Brain Controls the Fingers," Marc Schieber, asst. prof., WU Dept. of Neurology. Steven J. Rose Conference Room, Third Floor, East Bldg.

Wednesday, Nov. 4

4 p.m. Dept. of Biochemistry and Molecular Biophysics Seminar, "The Alpha-Helix (1951-1992): Four More Years?" Neville Kallenbach, Dept. of Chemistry, New York U. Cori Aud., 660 S. Euclid.

8 p.m. Dept. of English Poetry Reading by Debora Greger, Visiting Hurst Professor. Hurst Lounge, Room 201 Duncker Hall.

Thursday, Nov. 5

9 a.m. Dept. of Electrical Engineering Research Review keynote speech, "Supercomputing at Cray Research: Past, Present and Future" by James Smith, consulting engineer, Cray Research Inc., Chippewa Falls, Wis. Lopata Hall Aud.

Noon. Dept. of Molecular Biology and Pharmacology Seminar, "Mechanisms of Cell Fate Choice in the Developing *Drosophila* Retina," Ross Cagan, postdoctoral fellow, Howard Hughes Medical Institute, U. of California-Los Angeles. Molecular and Pharmacology Library, Room 3907 South Bldg.

Noon. Microbial Pathogenesis Seminar Series, "Hybrid Hepatitis B Virus Core Particles as Carriers of Heterologous Epitopes," Florian Schodel, Max-Planck-Institut Fur Biochemie, West Germany. Room 775 McDonnell Bldg.

2:30 p.m. Mechanical Engineering Seminar, "Numerical Simulation of Compressible Turbulent Flow," L.D. Kral, scientist, McDonnell Douglas Research Labs. Room 100 Cupples II Hall.

4 p.m. Assembly Series Holocaust Memorial/Isserman Lecture by Elie Wiesel, 1986 Nobel Peace Prize recipient and prof. of religious studies and philosophy, Boston U. Graham Chapel. Open only to members of University community with current I.D.

4 p.m. Dept. of Earth and Planetary Sciences Colloquium, "Fluid-Rock Interaction in the Crust: Stable Isotope Evidence From Veins," Robert Gregory, assoc. prof., Dept. of Geological Sciences, Southern Methodist U., Dallas. Room 102 Wilson Hall.

Friday, Nov. 6

9:15 a.m. Pediatric Grand Rounds, "Perinatal Management of Gastroschisis: Clinical and Experimental Observations," Jacob Langer, assoc. prof., WU Dept. of Surgery. Clopton Aud., 4950 Children's Place.

Noon. Dept. of Cell Biology and Physiology Seminar, "Why Do Hemophiliacs Bleed?" George Broze, assoc. prof., Division of Hematology, Dept. of Medicine, Jewish Hospital. Room 423 McDonnell Bldg.

1 p.m. School of Engineering and Applied Science Seminar, "A Novel Approach to the

Microfabrication of Acrylic Optical Waveguides," Qinrong Yu, visiting prof., WU Dept. of Electrical Engineering. Room 305 Bryan Hall.

6 p.m. WU Association Travel Lecture Series, "Lindbergh's Historic Flight to Paris" by film lecturer Robin Williams, who has appeared for the National Geographic Society lecture series for more than 20 years (also shown at 8:30 p.m.). Cost: \$4.50 at the door. Graham Chapel. For more info., call 935-5212.



Exhibitions

"Arthur Holly Compton: A Centennial Retrospective." Through Oct. 30. Olin Library, Special Collections, Level 5. Hours: 8:30 a.m.-5 p.m. weekdays. For info., call 935-5495.

"Green Acres: Neocolonialism in the U.S." Through Nov. 1. WU Gallery of Art, upper and lower galleries, Steinberg Hall. Hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For info., call 935-4523.

"Selections From the Gift of Mr. and Mrs. Edwin Grossman." Nov. 7 through Jan. 29, 1993. Olin Library, Special Collections, Level 5. Hours: 8:30 a.m.-5 p.m. weekdays. For info., call 935-5495.



Performances

Friday, Nov. 6

8 p.m. Performing Arts Dept. presents "As You Like It" by William Shakespeare (also, 8 p.m. Nov. 7, 13 and 14, and 2 p.m. Nov. 8 and 15). Cost: \$7 for general public; \$5 for WU faculty, staff, senior adults and students with valid I.D. Edison Theatre. For info. and reservations, call 935-6543.



Music

Sunday, Nov. 1

8 p.m. Gallery of Art and New Music Circle Concert, "Samplerist," Henry Gwirazda, artist. Cost: \$10 for general public; \$6 for students with valid I.D. and senior adults. Steinberg Hall Aud.



Films

Tuesday, Nov. 3

7 p.m. Dept. of Asian and Near Eastern Languages and Literatures Japanese Film

Series, "Tokyo Pop," James Hayman, director. Room 219 South Ridgley Hall.



Miscellany

Thursday, Oct. 29

9:30 a.m. University College Career Workshop, "After Homemaking? Career Decisions" (continues Thursdays through Nov. 12). The three-session workshop is designed for homemakers planning to enter the job market. Learn skills and techniques for making effective career decisions. Cost: \$50. For more info. and registration, call 935-6777.

Noon. WU and SIU-Edwardsville host the 1992 Annual Meeting of the Midwest Chapter of the Music Library Association (continues through Oct. 31). The meeting will open with a recital and talk by well-known ragtime pianist Trebor Tichenor at the Daniele Hotel, 216 N. Meramec Ave. in Clayton (meeting continues through Oct. 31). For more info. and cost, call 935-5529.

8 p.m. Black Arts and Sciences Festival features a performance by the Visions gospel choir and other choirs. Wydown East Multipurpose Room. For more info., call 935-5994.

Friday, Oct. 30

11 a.m.-1:30 p.m. School of Medicine Employee Health Service Flu Vaccine for WU medical school employees. Continues Nov. 6 and 13, same time, Seashell Lobby, McDonnell Medical Sciences Bldg.; also continues Nov. 2 and 9, same time, Clinical Sciences Research Bldg., Link, South End. Cost: \$5 (cash or check).

Saturday, Nov. 7

"Into the Streets" is a Washington University campuswide community outreach service project sponsored by the Office of Student Affairs. It is an opportunity for students to participate in community service projects addressing issues of hunger, homelessness, children, AIDS, the handicapped, women's health, the environment and animal protection. Participants choose an issue of interest to them and spend the day working within a group of students on an organized project. The projects are developed in cooperation with not-for-profit St. Louis community organizations, including St. Patrick's Center, Girls Inc., Effort for AIDS, Missouri Energy Care and others. The goal is to encourage student involvement with already existing on- and off-campus community-service groups. Wohl Center. For more info., call 935-5994.

Calendar guidelines

Events sponsored by the University — its departments, schools, centers, organizations and its recognized student organizations — are published in the Calendar. All events are free and open to the public, unless otherwise noted.

Calendar submissions should state time, date, place, sponsor, title of event, name of speaker(s) and affiliation, and admission cost. Quality promotional photographs with descriptions are welcome. Send items to Melissa Kohne at Box 1070 (or via fax: 935-4259). Submission forms are available by calling 935-8533.

The deadline for all entries is noon Tuesday one week prior to publication. Late entries will not be printed. The Record is printed every Thursday during the school year, except holidays, and monthly during the summer. If you are uncertain about a deadline, holiday schedule, or any other information, please call 935-8533.



Friendship and love are explored in the Performing Arts Department production of Shakespeare's "As You Like It." From left: senior Nicki Sarich as Rosalind, disguised as a man, enjoys a lighthearted moment with Orlando (sophomore David Baecker) and Celia (sophomore Michelle DiVito).

Shakespeare play celebrates love, friendship and freedom in nature

"As You Like It," one of William Shakespeare's most frequently performed plays will be presented by the Performing Arts Department at 8 p.m. Nov. 6, 7, 13 and 14 and at 2 p.m. Nov. 8 and 15 in Edison Theatre.

In conjunction with the performance, a debate concerning the true authorship of Shakespeare's plays will be held at 7:30 p.m. Nov. 12 in Edison Theatre.

The play, which is a comedy, celebrates love, friendship and the freedom found in nature.

The forest is where people from the city and the royal court go to get in touch with their true feelings and to find love and friendship. Shakespeare investigates three kinds of love — love at first sight, lust and true love.

The Washington University production will feature original percussion music by Lance Garger. That music will further accentuate the differences between the forest and the court world.

"One reason 'As You Like It' is so popular is that we can all relate to the games of love and to the blinders love puts on our eyes," says director Ann Marie Costa, coordinator of the acting/directing program. "But love in this play is not just frivolous, the characters in the play mature through the pursuit of love."

"As You Like It" also looks at the power and bond of friendship, as illustrated through two cousins, Celia (played by sophomore Michelle DeVito) and Rosalind (played by senior Nicki Sarich), who will go "o'er the wide world" for each other.

There are a number of new actors performing in this production, many of whom are freshmen and sophomores. Costa said she is excited about this "new blood" and credits the active recruitment program the Performing Arts Department has undertaken over the last few years.

The debate will feature Patrick Spottiswoode and Charles Vere. Spottiswoode, a frequent visitor to St. Louis and Washington University, is

education director of the Globe Theatre project in London. He will argue for Shakespeare's cause. Vere, descendant of Edward de Vere the 17th Earl of Oxford, will argue that the Earl of Oxford is the rightful author of the plays. This event is free and open to the public.

This debate has been boiling since the 1700s. Questions about the identity of Shakespeare divided scholars into two groups — Stratfordians (those who believe Shakespeare, "the man from Stratford-upon-Avon," wrote the plays) and Oxfordians (those who argue that the Stratford man didn't have the necessary background to scale the literary heights and couldn't possibly be the author of the works).

Tickets to "As You Like It" are \$7 for the general public and \$5 for senior citizens, students and Washington University faculty and staff.

For more information about the performance, call 935-6543. For more information about the debate, call 935-5858.

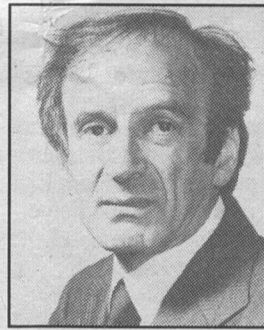
"One reason 'As You Like It' is so popular is that we can all relate to the games of love and to the blinders love puts on our eyes."

— Ann Marie Costa

Nobel Prize winner Elie Wiesel to deliver Holocaust lecture

Elie Wiesel, winner of the 1986 Nobel Peace Prize, will deliver the Holocaust Memorial/Rabbi Ferdinand M. Isserman Memorial Lecture at 4 p.m. Thursday, Nov. 5, in Graham Chapel. His talk, "When the Unthinkable Happens," is part of the University's Assembly Series. Seating for the lecture will be reserved for students and other members of the Washington University community with current identification until 4 p.m.

Wiesel, who has been at Boston University since 1976, is the Andrew W. Mellon



Elie Wiesel

Professor in the Humanities and a member of the departments of religion and philosophy. In 1982 he was Henry Luce Visiting Scholar in the Humanities and Social Thought at Yale University.

A survivor of both Auschwitz and Buchenwald concentration camps, he devotes his life to speaking out against human brutality. His efforts have earned him the U.S. Congressional Gold Medal of Achievement, the Medal of Liberty Award

and the 1986 Nobel Peace Prize. In addition to academic and professional honors, he has received more than 100 other awards.

Wiesel's more than 30 books have won numerous awards, including the Prix Medicis for *A Beggar in Jerusalem*; the Prix Livre-Inter for *The Testament*; and the Grand Prize for Literature from the City of Paris for *The Fifth Son*. His first book, *Night*, an account of his experience during the Holocaust, became a worldwide best seller translated into 18 languages. His latest book, *The Forgotten*, was published this year.

In 1987, Wiesel established The Elie Wiesel Foundation for Humanity. Its mission is to advance the cause of human rights and peace throughout the world by creating a new forum for the discussion of urgent ethical and moral issues confronting humankind.

A native of Sighet, Transylvania, Wiesel and his family were deported by the Nazis to Auschwitz when he was 15 years old. After the war, he became a journalist and writer in Paris.

The lecture is co-sponsored by the Assembly Series, Jewish and Near Eastern Studies Program, Religious Studies Program and Student Union. For more information, call 935-4620.

Sports

Football

Last Week's Result: Chicago 24, Washington 23

This Week: Principia College, 1:30 p.m. Saturday, Oct. 31, Francis Field

Current Record: 2-6

For the first time since the Founder's Trophy inception in 1987, Washington University dropped a "Cup" game to the University of Chicago. After winning the first five Founder's Trophy games, the injury-plagued Bears fell to the Maroons in a see-saw affair at Chicago.

The Bears held the lead on three different occasions and scored first when sophomore Kevin Jamison, Rices Landing, Pa., caught an 18-yard second-quarter touchdown pass. Sophomore Todd Hannum, Maryville, Tenn., and senior D.L. Warfield, Florissant, Mo., scored the Bears' other two touchdowns, while Adam Elegant, Miami Beach, Fla., added a 31-yard field goal. Warfield caught five passes for 116 yards, giving him 100 receptions for his career.

Volleyball

Last Week's Results: Washington 3 (13, 15, 15, 15), DePauw 1 (15, 8, 0, 0); Washington 3 (15, 15, 15), Colorado College 0 (9, 6, 9); Washington 3 (15, 15, 15), Wheaton 0 (10, 3, 9); Washington 3 (15, 15, 15), UC San Diego 0 (10, 10, 12)

This Week: University Athletic Association Championship, Friday-Saturday, Oct. 30-31, Chicago, Ill.

Current Record: 29-0

The top-ranked Bears defeated UC San Diego to win the crown at the Washington University National Invitational. The Bears won four matches en route to the tournament title to raise their record to 29-0. That mark surpasses the previous best-ever start of 27-0, set by the 1988 squad. Dating back to last year, the Bears have now won a school-record 34 consecutive matches.

Earning all-tournament honors last weekend were senior Michelle Kirwan, Tampa, Fla., sophomore Amy Albers, Washington, Mo., and junior Amy Sullivan, St. Louis, Mo., who was awarded most valuable player kudos.

This weekend, the Bears will attempt to claim their fifth University Athletic

Association title in the six-year history of the league.

Men's Soccer

Last Week's Results: Washington 3, Brandeis 2; Washington 3, Rochester 0

This Week: Carnegie Mellon University, 8 p.m. (EST) Saturday, Oct. 31, Pittsburgh, Pa.

Current Record: 12-2-3

With the two victories last weekend, the Bears earned their fourth conference crown since the league's inception in 1987 and also captured the league's automatic bid to the NCAA Division III tournament.

The Bears, who extended their UAA unbeaten streak to 12 matches, also ran their current unbeaten streak to 12. Washington, ranked seventh nationally and first in the South Central region, can win the UAA title outright this weekend by tying or defeating Carnegie Mellon University.

Pairings for the NCAA tournament will be announced next Monday, Nov. 2, with the regional tournament scheduled to get under way either Friday, Nov. 6, or Saturday, Nov. 7.

Women's Soccer

Last Week's Results: Washington 5, MacMurray 0; Brandeis 1, Washington 0; Rochester 1, Washington 0

This Week: Carnegie Mellon University, 6 p.m. (EST) Saturday, Oct. 31, Pittsburgh, Pa.

Current Record: 13-2-2

Last weekend's losses were the first suffered all season by the Red and Green, who had entered the week with a number-15 NCAA Division III ranking.

Last Wednesday, the Red and Green blitzed MacMurray by a 5-0 score behind a record-performance by sophomore Laura Miller, Florissant, Mo. Miller, who had registered Washington's first hat trick 13 days earlier, duplicated the three-goal outing and added an assist for a seven-point showing.

The Bears play their final regular season match Saturday and then will wait by the phone for a possible first NCAA bid. Pairings for the national tournament will be announced next Monday, Nov. 2.

Faculty receive promotions

The following faculty received promotions effective July 1, 1992, unless otherwise noted. The faculty with an asterisk next to their names were promoted with tenure. (Note: The next issue of the Record will contain a list of the faculty members who have been granted tenure or appointed with tenure on the Hilltop and Medical School campuses.)

Hilltop Campus

*Wendy F. Auslander to associate professor of social work; Lois Beck to professor of anthropology; Pedro Cavalcanti to adjunct professor of anthropology; *Willem H. Dickhoff to associate professor of physics; *Jean E. Ensminger to associate professor of anthropology; Edwin B. Fisher Jr. to professor of psychology (also psychology in medicine); *Marion A. Guck to associate professor of music; David Hadas to professor of English; *Peter Heath to associate professor of Arabic language and literature; Bamin Khomami to associate professor of chemical engineering; *Allan Larson to associate professor of biology;

*Richard J. Lazarus to professor of law; *Marvin H. Marcus to associate professor of Japanese language and literature; *Angela L. Miller to associate professor of art history; Michael I. Miller to professor of electrical engineering; *John V.C. Nye to associate professor of economics; *Michael C. Ogilvie to associate professor of physics; Enola E. Proctor to professor of social work; *Michael Sherberg to associate professor of Italian (promoted Oct. 2, 1992); Michael W. Sherraden to professor of social work and Benjamin E. Youngdahl Professor of Social Development; *Sarah B. Spurr to associate professor of art; *Arlene R. Stiffman to associate professor of social work; Michael J. Strube to professor of psychology; and *Robert K. Weninger to associate professor of German.

School of Medicine

Elliot E. Abbey to associate professor of medicine; Dana R. Abendschein to research associate professor of cell biology and physiology (promoted Jan. 1, 1992); Joseph J.H. Ackerman to research professor of chemistry in medicine; Michael L. Adams to research assistant professor of neuropharmacology in psychiatry (promoted July 1, 1991); Denis I. Altman to assistant professor of clinical neurology (promoted Jan. 1, 1992); Patricia J. Amato to assistant professor of clinical pediatrics; Cynthia L. Arken to research assistant professor of medicine (promoted Jan. 1, 1992); Thomas C. Bailey to assistant professor of medicine (full time at Jewish Hospital); Dennis M. Balfe to professor of radiology; *Benico Barzilai to associate professor of medicine; Walter F. Benoist to associate professor of clinical pediatrics; Charles F. Berryman to assistant professor of medicine and assistant professor of surgery; Gordon R. Bloomberg to professor of clinical pediatrics; Puran S. Bora to research assistant professor of medicine (full time at Jewish Hospital);

Matthew S. Bosner to assistant professor of medicine (full time at Jewish Hospital) (promoted Jan. 1, 1992); Mitchell D. Botney to assistant professor of medicine (full time at Jewish Hospital); Raymond E. Bourey to assistant professor of medicine; John W. Campbell to associate professor of clinical medicine; Steven M. Cohn to assistant professor of medicine; Ivan E. Collier to research assistant professor of medicine (dermatology); Wilson M. Compton III to assistant professor of psychiatry; Bill B. Daily Jr. to assistant professor of surgery (cardiothoracic surgery); Victor G. Davila-Roman to assistant professor of medicine;

Robert H. Deusinger to assistant professor of physical therapy (promoted Dec. 1, 1991); Tulay Dincer to assistant professor of clinical pediatrics (promoted Oct. 1, 1991); Charles H. Dougherty to associate professor of clinical pediatrics; Seth A. Eisen to associate professor of medicine; *Paul R. Eisenberg to associate professor of medicine; Samir K. El-Mofty to associate professor of pathology;

Christine A.H. Feely to assistant professor of occupational therapy (promoted Sept. 1, 1991); Victoria Fraser to assistant professor of medicine; Stephen J. Gaioni to research assistant professor of psychology in

medicine (promoted Jan. 1, 1992); Ira C. Gall to assistant professor of clinical obstetrics and gynecology; Edward Geltman to professor of medicine; Andrew N. Goldberg to assistant professor of otolaryngology;

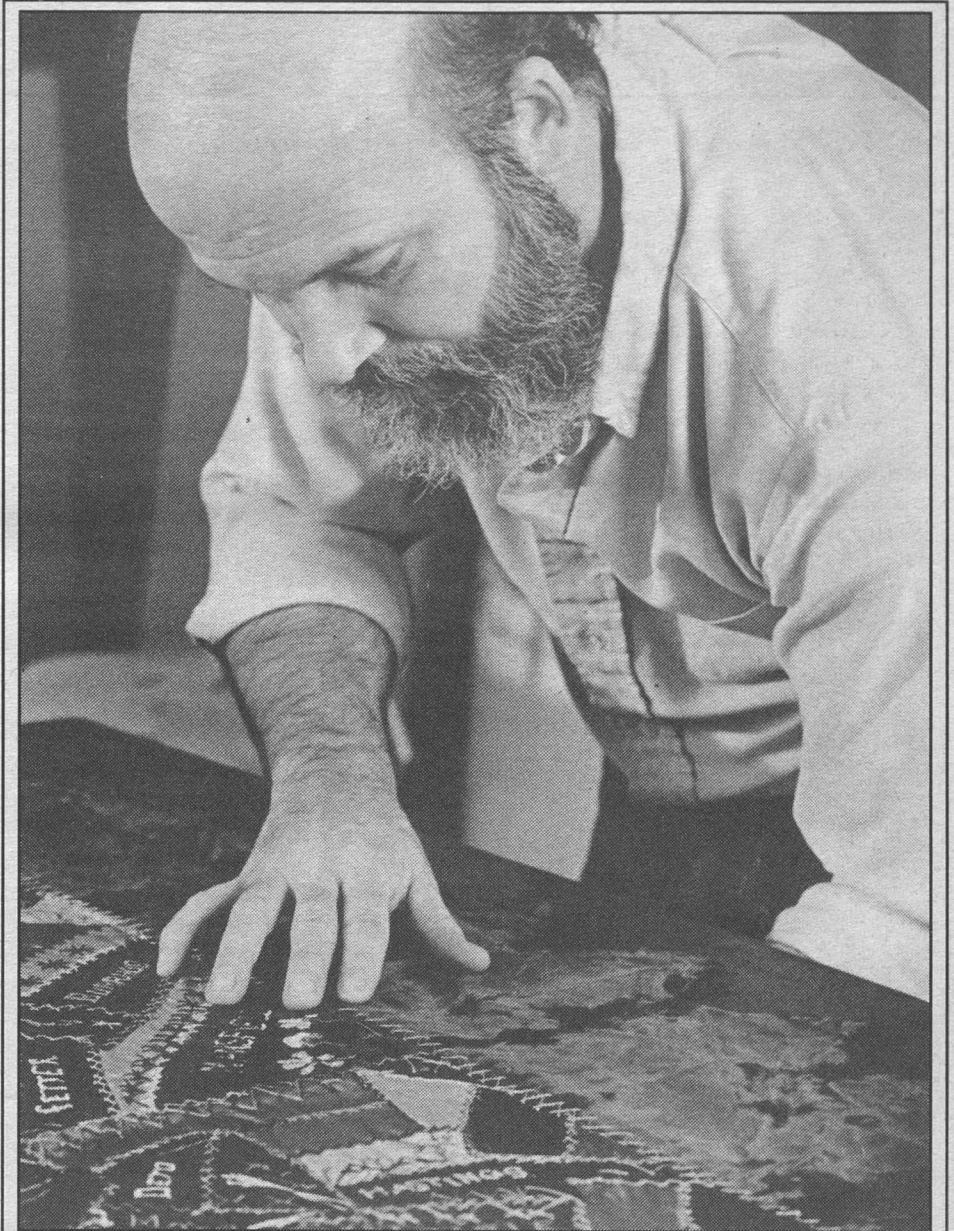
*Philip Green to associate professor of genetics; Richard W. Gross to professor of molecular biology and pharmacology (promoted Sept. 1, 1991); David Hagerty to assistant professor of medicine (full time at Jewish Hospital); Albert M. Hammerman to assistant professor of clinical radiology; Ted H. Hansen to professor of genetics; Sherrie M. Hautt to assistant professor of pediatrics (promoted Oct. 1, 1991); Philip E. Higgs to assistant professor of surgery (plastic and reconstructive surgery); Elizabeth Hilliker to assistant professor of medicine and assistant professor of surgery;

*V. Michael Holers to associate professor of medicine; Nancy E. Holmes to assistant professor of clinical pediatrics; William E. Hopkins to assistant professor of medicine; Phyllis C. Huettnner to assistant professor of pathology; Yukitoshi Izumi to research assistant professor of neurobiology in psychiatry; Charles A.C. Johnson to assistant professor of pediatrics; William L. Johnson to assistant professor of clinical pediatrics (promoted Oct. 1, 1991); Stephen A. Kamenetzky to associate professor of clinical ophthalmology and visual sciences (promoted July 1, 1991); Michele E. Kemp to assistant professor of clinical pediatrics (promoted Oct. 1, 1991); *Asko I. Kivikoski to associate professor of obstetrics and gynecology; Micki Klearman to assistant professor of clinical medicine; Lawrence M. Kotner Jr. to assistant professor of clinical radiology; Norton S. Kronemer to assistant professor of clinical pediatrics;

Lawrence G. Lenke to assistant professor of surgery (orthopedic surgery); Michelle Lennartz to research assistant professor of medicine; *Ellen Li to associate professor of medicine; *Bruce D. Lindsay to associate professor of medicine; Kenneth M. Ludmerer to professor of medicine; *Patrick J. Lustman to associate professor of medical psychology in psychiatry; Michael A. Mackey to assistant professor of radiology (promoted Jan. 1, 1992); *John E. Majors to associate professor of biochemistry and molecular biophysics; Ann G. Martin to assistant professor of medicine (dermatology) (promoted Jan. 1, 1992); Michael L. McDaniel to professor of pathology; Janet McGill to assistant professor of medicine; Hubert S. Mickel to associate professor of clinical surgery; Joseph P. Miletich to professor of medicine and professor of pathology; Tom R. Miller to professor of radiology; Scott D. Minor to assistant professor of physical therapy (promoted Dec. 1, 1991); Duane L. Mitzel to assistant professor of clinical ophthalmology and visual sciences (promoted Jan. 1, 1992);

Thalachallour Mohanakumar to professor of pathology and professor of medicine; Jeremiah J. Morrissey to research professor of medicine (full time at Jewish Hospital); Patrick R. Murray to professor of pathology and professor of clinical microbiology in medicine; *Robert J. Myerson to associate professor of radiology; Jeffrey J. Neil to assistant professor of neurology and assistant professor of pediatrics (promoted Jan. 1, 1992); John W. Newcomer to assistant professor of psychiatry; *Bruce Nock to associate professor of neurobiology in psychiatry; *Michael J. Noetzel to associate professor of neurology (promoted April 1, 1992); Randal C. Paniello to assistant professor of otolaryngology; Deborah L. Parks to assistant professor of clinical medicine; Abbas Parsian to research assistant professor of genetics in psychiatry (promoted July 1, 1991); Alice P. Pentland to associate professor of medicine; Julio E. Perez to professor of medicine; David H. Perlmutter to professor of pediatrics (promoted Jan. 1, 1992);

Frederick D. Peterson to professor of clinical pediatrics; Madelon T. Price to research professor of neurobiology in psychiatry; Thomas R. Przybeck to research assistant professor of anthropology in psychiatry; *Keith M. Rich to associate professor of neurological surgery; Steven M. Rothman to professor of neurology, pediatrics and neurobiology; Eugene H. Rubin to professor of psychiatry; James M. Russell to assistant professor of psychiatry; Julio V. Santiago to



John Martin of Creative Art Gallery prepares an antique quilt for framing. The quilt, which now hangs in the Edison Theatre balcony, was recently donated to the theatre by Mrs. H.A. Rankin, a 1934 Washington University graduate. The quilt bears signatures of characters, playwrights and others associated with the Abbey Theatre of Dublin. The quilt was auctioned in 1888 for the benefit of the Abbey Players. Rankin received the quilt from her mother.

professor of medicine; Samuel A. Santoro to professor of pathology and professor of medicine; Kenneth B. Schechtman to research associate professor of medicine (promoted Oct. 1, 1992); Warren G. Sherman to professor of clinical pediatrics; Robert B. Shuman to assistant professor of clinical medicine; Louis Simchowicz to professor of medicine; *William D. Snider to associate professor of neurology; Robert J. Spina to research assistant professor of medicine; Thomas L. Spray to professor of surgery (cardiothoracic surgery);

Rai A.K. Srivastava to research assistant professor of medicine (promoted Jan. 1, 1992); Joseph H. Steinbach to professor of anesthesiology; Robert S. Strashun to assistant professor of clinical pediatrics; Dragan M. Svrakic to assistant professor of psychiatry; Roslyn Sykes to visiting research assistant professor of medicine (promoted

Oct. 1, 1992); Ellis R. Taylor to assistant professor of clinical anesthesiology (full time at Jewish Hospital); Rene Tempelhoff to associate professor of neurological surgery (promoted July 1, 1991); Jeffrey P. Tillinghast to assistant professor of clinical medicine; Mary A.T. Tillman to associate professor of clinical pediatrics;

*Elbert P. Trulock III to associate professor of medicine; *Vesa Matti Vehaskari to associate professor of pediatrics (promoted April 1, 1992); Thomas M. Vesely to assistant professor of radiology; Howard G. Welgus to professor of medicine (dermatology) (full time at Jewish Hospital); Heather White to assistant professor of medicine; Kenneth J. Winters to assistant professor of medicine; and Kelvin A. Yamada to assistant professor of neurology and assistant professor of pediatrics.

Fitting babies into work — from page 1

earnings of women with children never reach the same level as the earnings of childless women, despite the fact that women with children try to "catch up" in the labor market by going back to work after their childbearing years. Ozawa calls this the "catch-up phenomenon." Her research found that when the women in the study were in their 30s, a greater proportion of those without children worked. When the women were in their late 40s and on, the reverse was true: a greater proportion of women with children worked.

Social implications

Ozawa warns that the social implications behind this issue could be devastating. With the cost of having a child and even temporarily staying at home increasing, Ozawa envisions the already low fertility rate among well-educated women plummeting even farther.

"The logic behind this issue is that more babies will come from lower-educated women — those who won't be forgoing much income to have babies," she says. "That's why it behooves society to put an even greater concerted effort into helping every child born to be fully developed."

Ozawa points out that earlier generations of women thought first about having a family and then figured out how to fit work into their schedules. Yet, she notes, already the opposite is becoming true.

"Women start their careers and then figure out how many children they can have and when. The number of children becomes ancillary to a woman's pursuit of her career," she says. "But women should be able to rightfully choose to have children and work without being economically penalized."

Not surprisingly, Ozawa's research found that education pays. Across the board, the better educated the woman, the higher her lifetime earnings. Ozawa was surprised, however, at how high the payoff is for black women. The lifetime earnings for black college-educated women were 10 percent higher than for white college-educated women, despite the fact that black women on the whole earn 21 percent less than white women.

"Unless society makes it possible for women to have both children and a job, we will suffer consequences," Ozawa said. "More and more women may have to decide not to have babies."

— Nancy Mays

Head of alumni, parents admission program named

Debra H. Wingood, who directed a worldwide alumni volunteer program at Tufts University, has been appointed director of the Alumni and Parents Admission Program at Washington University, David T. Blasingame, vice chancellor for alumni and development programs, has announced.

"One of Washington University's highest priorities for 1992-93 and beyond is to strengthen our Alumni and Parents Admission Program," said Blasingame. "We are very fortunate to have found such an outstanding person to head up this important effort."

As director of the program, Wingood brings Washington University alumni and parents into direct contact with prospective students in their hometowns as a means of personalizing the college application process. She promotes activities that encourage prospective students to learn more about the University's educational opportunities, faculty and students.

Wingood's previous work experience includes six years as associate director of undergraduate admission at Tufts University. In that position, she began the expansion of the university's alumni volunteer program, which now boasts more than 2,500 participants.

Wingood most recently was director of admission at the Duke University School of Law, where she introduced an alumni volunteer program. As an admission counselor at Georgetown University, she co-directed the activities of more than 40 alumni volunteer committees.

Wingood is a 1976 graduate of Tufts University, where she received a bachelor's degree in Russian language and literature.



Debra H. Wingood

Shirley Bohl, retired assistant to dean, dies

Shirley J. Bohl, who retired June 30 after more than 42 years of service at Washington University, died Oct. 17 at St. Luke's Hospital. She was 60.

Bohl retired as assistant to the dean of the College of Arts and Sciences, a position she held for nearly 11 years. Throughout her tenure at Washington, she also worked in other clerical positions in the college.

Shirley Bohl "was an extraordinary woman, intelligent, discreet, utterly dependable," said Burton M. Wheeler, Ph.D., professor of English and chair of religious studies, who, as dean of the college, worked with Bohl from 1969-1978.

"Without Shirley Bohl and the few persons like her, this University could not function effectively," said Wheeler, who knew Bohl for 35 years. "Her retirement, followed by her sudden death, is a loss to us all."

A memorial service was held Oct. 24 at St. John's Lutheran Church. Interment was private.

Survivors include her husband, Carl D. Bohl, D.Sc., adjunct assistant professor of environmental health at the Central Institute for the Deaf, part of Washington University's Medical Center; and a sister, Myrl L. Funk, administrative assistant/registrant in the School of Architecture.

Memorial contributions may be made to St. John's Lutheran Church, 15808 Manchester Road, Ellisville, Mo., 63011, or KFUA radio station, 85 Founder's Lane, Clayton, Mo., 63105.

For The Record

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

Of note

The Washington University chapter of Mortar Board, a national senior undergraduate honorary society, has presented its Teacher of the Month award for October to **Madeleine Brainerd**, Ph.D., assistant professor of English. The award, based on student recommendations, recognizes excellence and enthusiasm in teaching. ... **David L. Corwin**, M.D., assistant professor of psychiatry (child psychiatry) and director of the Center for Child and Family Development, will receive the 1993 Outstanding Service Award from the American Professional Society on the Abuse of Children (APSAC). Corwin will be presented the award in January during APSAC's general meeting in San Diego. The award honors an APSAC member who has made outstanding contributions to the society through leadership and service.

Speaking of

John W. Clark, Ph.D., professor of physics, was an invited speaker at the 16th International Workshop on Condensed Matter Theories held in San Juan, Puerto Rico. He lectured on "Nucleonic Superfluids." He also gave an invited talk titled "Teaching Systematics to Neural Networks" at the Second Workshop on Neural Networks for Physicists held at the Theoretical Physics Institute, University of Minnesota, Minneapolis-St. Paul. ...

John N. Drobak, J.D., professor of law, presented a paper titled "The Constitutional Right to 'Government-by-Purchase' in a Democratic State" at the Society for Social Choice and Welfare's annual meeting held at the University of Caen in France. ...

Theodosios P. Korakianitis, Sc.D., assistant professor of mechanical engineering, presented a colloquium lecture on "Steady and Unsteady Flow Effects on Axial-Turbine Blade and Stage Design" at the National Technical University of Athens, Greece. He taught a professional course titled Design of High-Efficiency Gas Turbines at the Massachusetts Institute of Technology (MIT). He taught the course with David Gordon Wilson, a professor at MIT. ...

Richard J. Lazarus, J.D., professor of law, spoke at a conference on water marketing in Salem, Ore. His topic was titled "Protecting Public Values in Water Marketing." The conference was sponsored by the Oregon Water Resources Council and the Willamette University School of Law. ...

During a conference on "Private Governments, Public Choices" held in Trento, Italy, **Robert H. Salisbury**, Ph.D., Sidney W. Souers Professor of American Government, presented a paper titled "Institutional Uncertainty and the Crisis of Authority in the United States." The conference was sponsored by the Autonomous Province of Trento and the Faculty of Sociology of the University of Trento. He also presented a paper on "Research On Interest Groups" and served as the discussant for a panel titled "Policy Networks" during the Chicago annual meeting of the American Political Science Association. He participated in a conference on "The Emergence of Pluralism in Eastern Europe" at the University of California, Los Angeles. ...

At the annual meeting of the American Psychological Association held in Washington, D.C., **Marcia C. Smith**, Ph.D., assistant professor of psychology, and **Therese M. Tryniecki**, Ph.D., a University alumna, gave a talk titled "Multidimensional Self-Concept in Bulimic and Non-Bulimic Women." Smith also presented a poster on "Use of Imagery on the Mental Rotation Test" with **Lyana C. Doty**, also a Washington alumna.

On assignment

Harry L.S. Knopf, M.D., associate professor of clinical ophthalmology, served as a visiting faculty member for ORBIS International's teaching program in Kunming, China. ORBIS International is a humanitarian, non-political organization dedicated to the prevention of blindness worldwide through education. Knopf lectured on techniques and complications of modern extracapsular cataract surgery with insertion and implantation of prosthetic intraocular lenses. In addition, he demonstrated these techniques by performing live, televised surgery aboard the ORBIS airplane. ...

David J. Pittman, Ph.D., professor of psychology, has been elected chair of the newly formed alcohol and drugs section of the American Sociological Association. He

also presented an invited paper on "Claims-Making and Claims-Makers in the Alcohol Enterprise" at the Society for the Study of Social Problems' annual meetings held in Pittsburgh. ...

The American Society for Cell Biology has elected **Philip D. Stahl**, Ph.D., Edward Mallinckrodt Jr. Professor and head of the Department of Cell Biology and Physiology, to its council.

Guidelines for submitting copy:

Send your full name, complete title, department, phone number, and highest-earned degree, along with a typed description of your noteworthy activity to *For The Record*, Campus Box 1070. Items must not exceed 75 words. For more information, call 935-5235.

John B. Ervin, former dean, dies

John B. Ervin, Ed.D., former dean of the School of Continuing Education (now University College) and the man for whom the John B. Ervin Scholarship Program is named, died Oct. 7 at his home in University City after an apparent heart attack. He was 76.

Ervin, a nationally recognized educator, came to the University in 1965 as associate dean of the school and director of the Summer School. He was appointed dean in 1968 and served in that position until 1977, when he was named a vice president of The Danforth Foundation, a national philanthropic organization dedicated to improving the quality of teaching and learning.

At the Danforth Foundation, Ervin was director of the Danforth Graduate Fellowship Program and played a key role in the creation of the Dorothy Danforth Compton Fellowships for minority students planning academic careers. He was vice president for nine years before retiring in 1986.

In early 1987, Washington honored Ervin by inaugurating the John B. Ervin Scholarship Program for talented college-bound black high school students. Under the merit program, up to 10 students receive renewable full-tuition scholarships and an

annual stipend of \$2,500 for four years of undergraduate study. To date, 63 Ervin Scholars have enrolled at Washington.

John Ervin's name "will live on in the John B. Ervin Scholarship Program devoted to the education of able young African-Americans and most especially in the lives of those Ervin Scholars who carry his name," said Chancellor William H. Danforth. Ervin "was a wonderful human being, a man of wisdom and balance, an individual who was regularly called upon when difficult issues arose. He also had a great sense of humor which helped all of us keep our balance and perspective."

Ervin received a bachelor's degree in biology from Kent State University in 1938 and a master's degree and a doctorate, both in education, from Columbia University, in 1946 and 1950, respectively. He received six honorary degrees as well.

A memorial service was held Oct. 14 at Second Baptist Church, where Ervin was an active member for the past 17 years. The body was donated to the School of Medicine.

Among the survivors are his wife, Jane Ervin of University City; a daughter, Jackie Creighton of Creve Coeur; a brother, James Ervin of Las Vegas; a sister, Agnes Brown of Kent, Ohio; three grandchildren; and a great-grandchild.

Memorial contributions may be made to the Upward Bound program, the Nance Scholarship Fund, Harris-Stowe State College, Operation Food Search or the United Negro College Fund.

Risk of TB infection low — from page 1

disease. All remained at work.

The number of TB cases in the United States declined significantly from the early 1950s until 1985 when the number of cases began increasing, particularly in young adults.

"Since brief exposure to a few TB germs rarely infects a person and TB is present in the general population, it is not possible to determine precisely when and where those who tested positive may have been exposed," explained Laurie Reitman, M.D., director of the University Health Service.

Most people who become infected do not develop the disease because the immune system brings the infection under control. Most of those who do develop the disease can be cured by medicines that allow them to be treated at home, live normal lives and keep their jobs.

Experts at the Washington University School of Medicine have assured the University community that the possibility is very remote that employees or students who had incidental contact with the linen room operation or the South Forty campus between April and August would be infected.

"We are not worried, but we want to be certain that we have done everything we can to ensure the safety of the Washington University community," said Chancellor William H. Danforth. "Even though the risk

is close to zero, I recommend that those who may have had contact with the linen room last spring be skin tested. Testing should include those South Forty residents with linen contracts last semester."

While the risk of infection is very low, the University will offer free skin testing for tuberculosis to any employee or student who wishes to be tested. Any member of the Washington University community may come to the lobby of Mallinckrodt Center between 4-8 p.m. on Friday, Oct. 30, or on Monday, Nov. 2. Those tested on Friday must come back to Mallinckrodt between 4-8 p.m. on Monday to have their test read. Those tested on Monday must come to the University Health Service in Karl Umrath Hall on Thursday to have their test read.

A brochure, "Facts about ... Tuberculosis," published by the American Lung Association is being distributed for posting to all deans and department heads on the Hilltop Campus. "These pamphlets answer many of the questions employees may have about the disease, and additional copies are available to all employees by calling or stopping by the human resources office," said Gloria W. White, vice chancellor for human resources (Room 126 N. Brookings Hall).

Students may obtain copies of the brochure through the University Health Service located in Karl Umrath Hall.

Opportunities & personnel news

The following is a list of positions available on the Hilltop Campus. Information regarding these and other positions may be obtained in the Office of Human Resources, North Brookings Hall, Room 126, or by calling 935-5990.

Director of Career Services

920239. *School of Law*. Requirements: Bachelor's degree, master's degree preferred. Strong interpersonal skills; excellent verbal and written communication skills; ability to establish and maintain excellent relations with staff, students, alumni and employers; experience in career counseling, legal recruitment and/or placement or related administrative or marketing experience. Resume and three letters of recommendation required.

Technical Assistant

930035. *Applied Research Lab*. Requirements: Bachelor's degree; typing 50 wpm with accuracy; ability to use a UNIX-based computer system for desktop publishing, report preparation, report editing and tracking of equipment and supplies. Clerical testing and three letters of recommendation required.

Contract and Grant Coordinator

930053. *School of Social Work*. Requirements: Bachelor's degree with accounting background; typing 40 wpm with accuracy; strong communication and interpersonal skills; experienced in funded research and administration and working with federal governmental agencies and foundations; PC word processing and spreadsheet skills; ability to organize and work under pressure during deadline period. Clerical testing and three letters of recommendation required.

Rare Books Catalog Librarian

930056. *Olin Library*. Requirements: MLS degree from ALA-accredited library school; master's degree in the humanities desirable; academic library or equivalent cataloging training or experience with AACR2 and LC classification; rare books cataloging training or experience; archival and manuscript cataloging experience using AMC format, ability to work with non-English languages and non-Roman alphabets; working knowledge of OCLC and NOTIS or other automated systems; reference training or user service experience; supervisory experience; knowledge of preservation procedures; and knowledge of national and international trends in bibliographic description desirable. Resume and three letters of recommendation required.

Researcher

930061. *Development Services*. Requirements: Bachelor's degree, liberal arts background preferred; strong research and writing skills. Clerical testing, resume and three letters of recommendation required.

Switchboard Operator

930065. *Telephone Services*. Requirements: Must be a high school graduate; typing 25 wpm with accuracy. Duties: Answer incoming calls to the University, transfer calls and/or provide information as requested using an online directory; place operator-assisted calls and set up conference calls when needed; perform data input on PC software and issue basic network routines; assist in preparing packet/mailings, stuffing envelopes, etc.; other duties as required. This is a part-time nine-month position. Clerical testing and three letters of recommendation required.

Senior Project Leader

930068. *Information Systems*. Requirements: Minimum of four years of college; minimum five years data processing experience; proven ability to design, program and install major data processing systems; proven ability to lead others in data processing project development; proven ability to design, write and install MANTIS or FO-

CUS systems. Resume and three letters of recommendation required.

Gift Processor

930072. *Development Services*. Requirements: Minimum of one year of college required; typing 50 wpm with accuracy; experience in bookkeeping and computerized recordkeeping highly desirable; experience with adding machine, CRT or other data entry devices. Clerical tests and three letters of recommendation required.

Administrative Coordinator for Academic Affairs

930078. *School of Business*. Requirements: Minimum two years of college, bachelor's degree preferred. Ability to communicate effectively (diplomatically yet assertively when necessary) with faculty, staff, students, administrators, and general public; ability to function independently with minimum supervision and ability to take initiative and assume responsibility as necessary; ability to organize, prioritize, and work through different projects simultaneously and efficiently; maturity and sound judgment and sensitivity to the handling of confidential information; supervisory skills, university experience accepted in lieu of degree. Resume and three letters of recommendation required.

Library Assistant, Part-time

930081. *Olin Library*. Requirements: Two years of college or equivalent experience. Library or audiovisual experience desirable; typing 35 wpm with accuracy; ability to work well with others and to respond to the public in a helpful and courteous manner; some mechanical aptitude; a willingness to learn library automation, microcomputers, and audiovisual equipment is a necessity; a flexible attitude and ability to work under some pressure is required;

willingness to work occasional weekends if necessary; ability to use an IBM PC; experience with WordPerfect and Lotus desirable. Clerical testing and three letters of recommendation required.

Department Secretary

930083. *Alumni and Development Programs*. Requirements: Associate degree or equivalent. Specialized secretarial or business training; three years general office experience; typing 50 wpm with accuracy; word processing experience or willing to learn; good command of English; alert and well spoken; can deal with multiple priorities with minimum supervision; works, and relates well with people. Clerical testing and three letters of recommendation required.

Administrative Secretary for the Ph.D. Program

930086. *School of Social Work*. Requirements: Ability to write original memos and letters; supervise three work-study students; excellent and accurate verbal communications skills; conference coordination; prior experience in university admissions; accurate word processing and spread sheet capability; some college; excellent organizational skills; ability to write, proofread, and communicate accurately; superb interpersonal skills; admissions management experience; above average knowledge of grammar and spelling; typing 50 wpm with accuracy. Clerical testing and three letters of recommendation required.

Administrative Assistant, Career Services

930088. *School of Law*. Requirements: Minimum four years of college, bachelor's degree preferred. Experience in an academic or legal setting preferred; excellent verbal and written communication skills; ability to work well under pressure, work independently and exercise sound judgment;

typing 40 wpm with accuracy. Clerical testing and three letters of recommendation required.

Assistant Director of Conference Planning and Guest Housing

930089. *Housing Office*. Requirements: Some college. Ability to relate to the public; good oral and written skills; ability to work independently and under pressure; typing 45 wpm with accuracy. Duties: Assist in the overall management of conference planning, guest housing and summer school housing programs; assist in supervision of the duties and activities of the employees within the three areas; prepare letters of agreement; type correspondence; maintain records of financial and conference transactions; conduct tours of University facilities to prospective clients; assist with publications and mailings; will include some weekend and evening work; some travel involved. Clerical testing and three letters of recommendation required.

Medical school openings

The above listing includes only those positions available on the Hilltop Campus. Plans are under way to include School of Medicine job vacancies in the *Record*. The medical school now posts available positions at the Office of Human Resources, 4480 Clayton Ave. Applicant hours for the general public are Monday through Wednesday from 9 a.m. to 2 p.m. Employees of Washington University may view the job postings between 8 a.m. and 5 p.m. Monday through Friday, and if interested may pick up an application and make an appointment to speak with one of the recruiters.

Neutrino mass is venture into new physics — from page 1

University's McDonnell Center for the Space Sciences, published their findings, "Neutrino Mass Limits From a Precise Determination of $\beta\beta$ -decay Rates of ^{128}Te and ^{130}Te ," in the Oct. 19 issue of *Physical Review Letters*.

Their immediate goal was to determine the very slow double beta ($\beta\beta$) decay rates of the two tellurium isotopes tellurium-128 and tellurium-130. In the double beta process, two neutrons of an isotope of an element decay by emitting two electrons, thereby producing an isotope of a new element with two more protons and two less neutrons. Tellurium, for example, becomes the element xenon.

According to Cowsik, the task was extremely challenging, in part because of the scarcity of double beta decays that tellurium, or any element, undergoes.

"Double beta decay of a nucleus is an extremely rare process in nature," explains Cowsik, a professor at the Tata Institute of Fundamental Research in Bombay and director of the Indian Institute of Astrophysics. "Quantum mechanics dictates that the probability of a double beta decay taking place is between 10^{14} and 10^{19} times smaller than that of a single beta decay, which may happen only once in a million years."

Theoretically, there are at least two ways in which double beta decay can occur. According to the "standard model" of electro-weak interactions, which govern processes such as beta decay, two antineutrinos are emitted along with the two electrons. However, according to non-standard models, it is sometimes possible for an antineutrino produced in the decay of one neutron to be absorbed by another neutron, changing it into a proton. In this case no neutrinos come out of the nucleus. But for this to occur, an antineutrino must behave like a neutrino, implying that the neutrino is its own antiparticle.

Particles that behave this way are called Majorana particles. For neutrinos to be

Majorana particles they also must have a "Majorana mass," so that an observation of neutrinoless double beta decay would amount to discovering neutrino mass. It is for this reason that the study of double beta decay is of such great interest.

Determining the half-lives

It was first necessary to use samples of tellurium ore that were old enough to have produced enough xenon from the decay of tellurium. The researchers obtained samples putatively over a billion years old from mines in Colorado, Quebec and Australia.

The next step was for the team members who specialized in thermal ionization mass spectrometry, Joyce Brannon, Ph.D., and Frank Podosek, Ph.D., both in the Department of Earth and Planetary Sciences, to determine the precise age of the samples. This work required measuring the isotopic composition of lead in samples only a fraction of a gram in size.

Ages for many of the samples were known only poorly or incorrectly, Podosek reports. The isotopic composition of xenon in other pieces of the samples was determined by graduate student Bob Brazzle using a different mass spectrometer built by Charles Hohenberg, Ph.D., both of the Department of Physics. Counting the exact number of xenon atoms in proportion to the number of parent tellurium atoms allowed the researchers to precisely determine the relative and absolute half-lives for the double beta decay. (Half-life is a measure of how long it would take half of the radioactive atoms in a sample to decay.) The end results were a tellurium-130 half-life of $(2.7 \pm 0.1) \times 10^{21}$ year and a tellurium-128 half-life of $(7.7 \pm 0.4) \times 10^{24}$ year.

"To get a feeling for the enormous decay lifetime these numbers represent," Bernatowicz noted, "just consider that the age of the universe is more than a hundred billion times shorter than the tellurium-130 half-life." He also points out that the tellu-

rium-128 half-life is the longest radioactive lifetime to ever have been measured.

Understanding neutrino mass is a venture into truly new physics. "One reason for studying double beta decay is for the information it would yield about weak interactions and weakly interacting particles," says Cowsik. "In the standard model, the neutrino is assumed to be massless. But, if it does have mass, then the physics goes beyond the standard model."

Comparison of theoretical calculations of rates of double beta decays involving Majorana neutrinos with the experimentally determined rates permits one to set limits on the Majorana mass of the electron neutrino. The results of the University's research, Cowsik says, are some of the most stringent limits yet found for a neutrino's Majorana mass — no more than one electron volt. By way of comparison, the electron has a mass of 511,000 electron volts.

Aside from physics beyond the standard model, neutrino mass is potentially of great importance in cosmology. Cosmologists have known for some time that most of the mass of the universe is not luminous, but the nature of the "dark matter" accounting for the bulk of the mass is unknown. Cowsik was the first to suggest that neutrinos produced in the Big Bang might constitute the dark matter.

Besides the electron neutrino involved in double beta decay, there are two other "flavors" of neutrinos, the muon neutrino and the tau neutrino. "If the mass of any one of these neutrino species were 30 electron volts," he says, "it would be enough to account for all of the dark matter."

Perhaps the most important application is the most basic: proving or disproving the concept that neutrinos have any mass at all. Moving closer to that question is the next step in deciding whether the laws of particle physics stand, or irrevocably change.