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Volume 23 No. 33



Washington University in St. Louis



Plumbing Earth's depths Network probes core-mantle boundary

By TONY FITZPATRICK

A seismologist at Washington University has provided an unprecedented view of Earth's blazing core-mantle boundary through analysis of seismic waves from a unique array of seismometers in the eastern United States.

Michael E. Wyssession, Ph.D., associate professor of earth and planetary sciences in Arts and Sciences, has found that the bottom of the mantle contains two types of rocks that are distinctly separated, much like the continental and oceanic crust at Earth's surface.

Wyssession and colleagues from Brown and Northwestern universities and the New Mexico Institute of Mining and Technology made up a seismological team that installed the Missouri-to-Massachusetts (MOMA) network of 18 sophisticated seismometers in 1995 and recorded data until 1996. The National Science Foundation (NSF) funded the network.

MOMA is the first network of seismometers ever deployed across the eastern United States, and it is the first seismographic array used primarily to study the core-mantle boundary, the geologically fascinating division between the rocky mantle and liquid iron

outer core that is 2,000 miles beneath our feet.

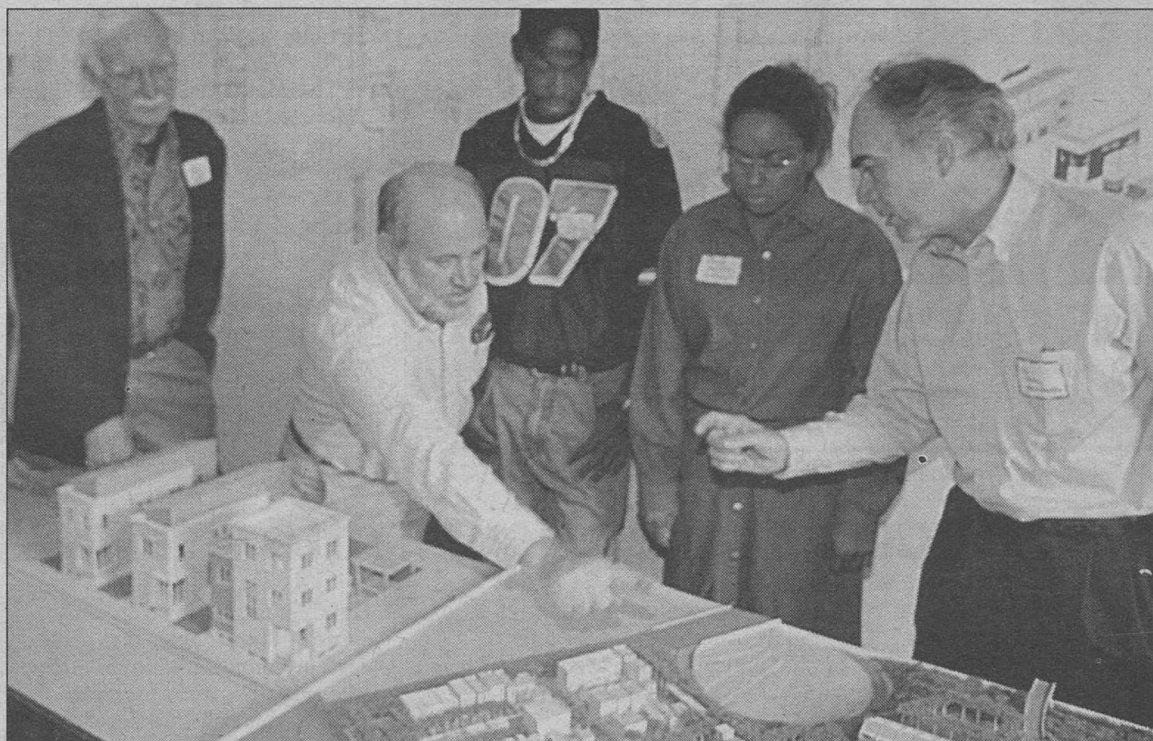
Writing in the journal *Science*, Wyssession reported that the two distinct types of rock at the base of the mantle are cold slabs of recycled oceanic floor that are spreading horizontally at the core-mantle boundary and a dense layer of mantle dregs that gets pushed around by these descending slabs.

His conclusions are based on the ratio of the two different kinds of seismic waves that emanate from an earthquake, P waves and S waves. Seismic P waves travel in a domino effect, with each bit of rock pushing the next one, right across the Earth. S or shear waves have lateral movements, the way a sideways twist will send a wave traveling down the length of a rope.

The speeds of P and S waves change in different ways as they travel through different materials, and their ratios have previously been used to map out different types of rock at Earth's surface. Wyssession is the first to use this approach reliably to investigate the core-mantle boundary.

"We observed a very strange behavior," Wyssession said. "The P and S waves usually vary in tandem, especially if variations are due to changes in temperature. We

See **Seismometer**, page 6



Jo Noero, the Ruth and Norman Moore Professor of Architecture, right, and Donald Royse, professor emeritus of architecture, left, explain new housing proposed for St. Louis' Bohemian Hill at a recent project groundbreaking. From left are Royse; Bob Brandhorst, executive director of Youth Education and Health in Souldard (YEHS); Isa Aziz, YEHS board member and a Bohemian Hill resident; Christine Gardner of the Missouri Department of Economic Development; and Noero.

Breathing new life into Bohemian Hill

By ANN NICHOLSON

Inspired by the results of a design exercise for a couple of graduate students, three architecture faculty members are pooling their talents to transform Bohemian Hill, a blighted area on St. Louis' near South Side, into vibrant new housing.

The metamorphosis of the five-block "no man's land" is a fitting challenge for Jo Noero, the Ruth and Norman Moore Professor of Architecture and director of the graduate program; Donald Royse, professor emeritus of architecture; and Carolyn Toft, lecturer.

Noero, who is currently designing the Apartheid Museum in Port Elizabeth, South Africa, launched his architectural career building desperately needed housing and education centers for black South African communities. Royse, St. Louis' first director of urban design from 1990 to 1993, has played an integral role in urban revitalization projects. Toft, executive director of Landmarks Association of St. Louis, spearheads the nonprofit organization's diverse efforts to preserve St. Louis' architectural heritage.

Partnering with YouthBuild St. Louis AmeriCorps, an educational and construction training program for at-risk youths, and the Bohemian Hill Redevelopment

Steering Committee, the three faculty members recently broke ground on two prototype houses. Designed by Noero and Royse, the homes will be at the intersection of Souldard and 13th streets and are the first in an overall proposal for 67 new houses and 45 rehabilitated homes and apartments.

"The Bohemian Hill project shows how high-quality, contemporary design can complement existing historic design without mimicking historic design," Noero said. "We are not only offering new, single-family housing in the city of St. Louis at an affordable price, but also demonstrating how quality design can reinvigorate declining urban areas."

Bounded by Tucker Boulevard, Lafayette Avenue and Interstates

44 and 55, Bohemian Hill lies east of Lafayette Square and west of the Souldard and LaSalle Park neighborhoods. The site is across from the abandoned City Hospital and the former Darst-Webbe public housing complex, which is being replaced by a federally funded, mixed-income housing development.

Originally home to immigrants from Eastern Europe, Bohemian Hill experienced an ongoing period of decline after a number of the homes were demolished to make way for the Darst-Webbe project and interchanges for Interstates 44 and 55. The area has 30 remaining historic buildings, most unoccupied, and vacant tracts of land.

"There was generally a feeling

See **Bohemian**, page 4

Van Cleves endow new Arts and Sciences chair

By BARBARA REA

A \$1.5 million pledge from Georgia Dunbar Van Cleve and William Moore Van Cleve will establish an endowed professorship in Arts and Sciences at the University, Chancellor Mark S. Wrighton announced June 1.

The new Dunbar-Van Cleve Professorship in Arts and Sciences will be awarded to a distinguished faculty member in history, English literature, anthropology, mathematics, sociology or a related field, art history, archaeology or genetics. Edward S. Macias, Ph.D., executive vice chancellor and dean of Arts and Sciences, expects the appointment to be announced in the fall.

"Georgia and Bill Van Cleve are two of our staunchest supporters," Wrighton noted. "Their leadership and abiding dedication to their alma mater have been exemplary. We are extremely fortunate to benefit from their generosity."

The Van Cleves are long-time active members of the Washington University community. Georgia received a bachelor's degree from Arts and Sciences in 1951 and attended the School of Law. A strong supporter of Arts and Sciences, she has served the school in a number of capacities and is active in the Campaign for Washington University, serving as



Georgia Dunbar Van Cleve and William Moore Van Cleve are long-time supporters of the University.

a member of Arts and Sciences' Capital Resources Committee and as chair for special gifts. In 1997, she was appointed to the Arts and Sciences National Council. She served as co-chair of

See **New chair**, page 6

Joe Deal accepts RISD post

Joe Deal, dean of Washington University's School of Art, has accepted a position as provost of the Rhode Island School of Design. Deal, who also served as head of the new Visual Arts and Design Center (VADC) currently being developed, will conclude his duties here as of June 30.

"I feel honored to have served as dean of the School of Art for the last 10 years," Deal said. "The

school's hard-working faculty, together with our talented alumni, are the main reason for its outstanding reputation nationally and internationally. Without the efforts of the faculty



Deal: Art dean goes to Rhode Island
See **Deal**, page 2

AAAS elects Pollak, Robins Faculty join international learned society

By NANCY BELT

Robert A. Pollak, Ph.D., the Hernreich Distinguished Professor of Economics in Arts and Sciences and the John M. Olin School of Business, and Lee N. Robins, Ph.D., University Professor of Social Science and professor of social science in psychiatry, have been elected to the American Academy of Arts and Sciences.

The international learned society has a dual function: to elect to membership men and women of exceptional achievement drawn from science, scholarship, business, public affairs and the arts; and to conduct a varied program of projects and studies responsive to the needs and problems of society.

Over the years, the academy, using multidisciplinary analysis, has produced influential and pioneering studies on significant



Pollak: Prolific author, researcher



Robins: World leader in field

contemporary issues such as arms control and international security, poverty, medical ethics, religious fundamentalist movements worldwide, ethnic and racial conflict, education reform and environmental protection.

"We are delighted that Bob Pollak and Lee Robins have received this honor from such an illustrious group," said Chancellor Mark S. Wrighton. "The honor is a testament to their great ability to contribute to society, representing past and present

See **AAAS**, page 6



Stars William H. Danforth, chairman of the University's Board of Trustees, and famed musician John Hartford, LA '60, are enshrined with stars in the University City Walk of Fame May 16. The stars honor persons from St. Louis who have made major contributions to the nation's cultural life.

Taking technology to market

Computer scientists form Growth Networks Inc.

By TONY FITZPATRICK

A new company formed by three Washington University computer scientists has received initial funding of \$6 million from two Silicon Valley venture capital firms to develop next-generation Internet technologies.

Growth Networks Inc., with an office in suburban Brentwood, Mo., and headquarters in Palo Alto, Calif., is being financed by New Enterprise Associates (NEA) and Institutional Venture Partners (IVP) of Menlo Park, Calif.

The company is the brainchild of Jonathan S. Turner, Ph.D., the Henry Edwin Sever Professor of Engineering; Jerome R. Cox Jr., Sc.D., senior professor of computer science; and Guru Parulkar, Ph.D., associate professor of computer science.

Growth Networks has recently signed a licensing agreement with the University and this spring paid the first installment on the licensing fee under that agreement.

Andrew Neighbour, associate vice chancellor of technology management and director of the Center of Technology Management, considers the arrangement a model for technology transfer.

"The Growth Networks venture illustrates how universities and the private sector can work effectively together to create new businesses without compromising the interests of the University and its faculty," said Neighbour. "Throughout the negotiation process, both parties have worked hard to minimize potential conflicts and to ensure that all will share appropriately in the benefits of this new relationship."

The three professors incorporated Growth Networks in Missouri in December 1997 and sought funding for their ideas both locally and in the San Francisco Bay and Boston areas. Less than a year ago, interest from Menlo Park venture firms grew, culminating in the funding of Growth Networks by NEA and IVP in November 1998. John McCarthy, a partner in a local venture firm, coached the three founders in the intricacies of starting a company.

Work that the three computer scientists performed over the past decade at the School of Engineering and Applied Science's Applied Research Laboratory (ARL) serves as the foundation and springboard for the company. All three men have directed the ARL at various times since its foundation in 1988, and Turner currently directs it.

The company is focused on designing, developing and marketing a new class of network communication products for the Wide Area Networking (WAN) market. Because the Internet and corporate networks are experiencing exponential growth, there are many challenges facing service providers. There are predictions that Internet traffic will increase 8,000-fold over the next decade. This scenario drives the demand for network scalability and growth along with the need for reliable, high-capacity networks.

Growth Networks focuses on creating and delivering offerings that meet those market demands.

"The demand for networking technology and the advances of the Internet and other high-speed

networks have progressed far more rapidly than we ever could have conceived in 1988, when the ARL was begun," said Cox, who co-founded the laboratory with Turner. "The Internet is currently doubling every 100 days. This can't be sustained forever without scaling up the equipment needed to carry all of the traffic and provide the many different applications. It's possible that the soda machine down the hall will be on the Internet, as well as the office copier and your automobile, to name just a few possibilities. So there is a well-established need for the kinds of technology that Growth Networks can provide."

Ron Bernal, formerly a senior executive at Silicon Graphics, is president and chief executive officer of Growth Networks Inc. "The past decade has witnessed unimagined transformations in the data and telecommunications industries," Bernal said. "We are developing and will deliver products that make it possible for Internet and telecom service providers to deliver the state-of-the-art platforms upon which the new millennium's Internet will be built."

A linchpin of Growth Networks is Turner's internationally recognized expertise in the design and analysis of switching systems. He holds more than 20 patents on high-speed switching systems.

"Creating scalable system designs is the key to building networks that can cost-effectively scale up to meet the Internet's growing requirements," said Turner. "We've been able to design systems which are just as economical in very large configurations as they are in small ones."

Cox has been a faculty member at Washington University since 1955 and has been a major player in a number of key advances in telemedicine and other communications areas.

"I've been on the university side of technology transfer, even before I came to Washington University," Cox said. "I've seen lots of technology take off and become important. But I've always been curious about what technology transfer is like on the other side of the table. And now I'll find out."

Wrighton added that the University is beginning the effort of finding Deal's successor. He also stressed that work on the VADC will continue to move forward, under the leadership of the VADC executive committee and internationally renowned architect Fumihiko Maki. The VADC aims to link five University areas — the School of Art, School of Architecture, Gallery of Art, Art and Architecture Library and Department of Art History and Archaeology in Arts and Sciences — into a collaborative program. Plans include the design and construction of shared facilities as well as the renovation of existing facilities.

Deal

Leaving University to be RISD provost

— from page 1

and the support and encouragement of alumni and friends, we would not have succeeded to the degree that we have."

Chancellor Mark S. Wrighton said: "When you have someone as talented and capable as Joe, you expect that they will become much sought after. The Rhode Island School of Design is an internationally acclaimed institution, and we wish Joe every success in his new endeavors."

WU students take science into schools

By REBECCA RIEHL

Summer vacation is here, but not for outreach planners in the Department of Biology in Arts and Sciences, who are hard at work on plans for the autumn resumption of a highly successful community program targeting science education in local schools.

The program gives University volunteers firsthand experience in the challenges and rewards of teaching local elementary and middle school students, with the goal of increasing the youths' interest in science through hands-on projects and contact with college-level scientists.

The volunteers, mostly undergraduates with a few other members of the University community, travel in pairs to schools throughout the St. Louis region. They give presentations in different areas of science along with activities for the students. They plant terrariums, dissect fetal pigs and carry out simple chemistry experiments. The volunteers pay a follow-up visit to each class to reinforce the basic concepts, then move on to the next school.

"I hope to show that science is not exclusive," said senior Doug Ramsey. "I think kids should understand that science is something that they can grasp, and I hope to spark their interest." This is where the hands-on aspect is so important, program planners agree: Interest invariably perks up when the children can literally "get a grasp" on science.

"It is so fun to see students who expect dissection to be 'gross' or 'boring' begin to ask questions and want to participate," junior Heather Knowles said.

The volunteers are part of the Washington University Science Teaching Teams program, managed by Elaine Alexander, assistant outreach coordinator in the biology department. She draws on her years of experience as a former middle school teacher to help plan the presenta-

tions. Materials are available through a grant for science education outreach from the Howard Hughes Medical Institute.

Students volunteer for a variety of reasons. A few volunteers are considering teaching as a career. Some are drawn to the opportunity to make a meaningful contribution to the community; others simply want to add some volunteer

experience. Materials are available through a grant for science education outreach from the Howard Hughes Medical Institute. eighth grade students are only some of the variables that make each presentation unique. "I have learned to tailor my presentations to suit each audience," Knowles said.

The elementary and middle school teachers request the demonstrations through Education 600, a University College hands-on science class for area teachers. The class covers both physical and life science experiments, provides materials to the teachers and offers them the option of having outside presenters visit their classrooms.

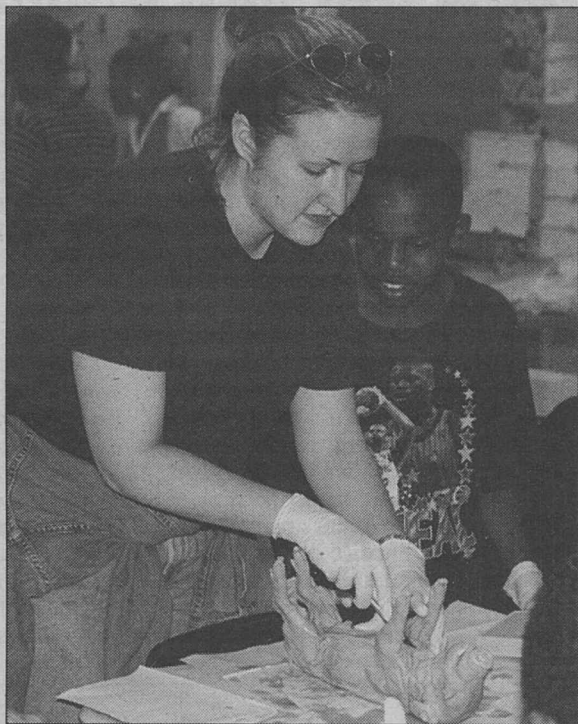
The presentations cover both physical and life sciences. Topics include plants, bacteria, chemistry, genetics, the water cycle, matter, dissection, geology, the brain and global climate. There is also a presentation on how to do a good science fair project. Next year will see the addition of the heart and Mendel's genetics, as well as molecular biology and biomedical ethics, both for high school students.

Forty-seven volunteers participated in the teaching teams this year, up from only a dozen students in 1995-96.

Presenters visited 20 schools this past year, five within the city and the rest ranging from Illinois to western St. Louis County. More than half of the schools were from lower-income areas. The program also coordinates presentations for home-schooled students on campus.

"I always try to emphasize the availability of higher education, especially to the groups most unlikely to consider it an option," said Sara Jane Smith, who graduated in May. The teachers have observed that meeting the volunteers encourages students to think about college for themselves.

Added Knowles: "I really want to inspire a love of learning and especially of science in the students. I think that providing a hands-on learning experience really motivates and excites students."



Molly Peck, a senior this fall in Arts and Sciences, shows Cornell Read the fine points of dissection during a Science Education Outreach Program biology lesson at Danforth Elementary School in the Riverview Garden School District.

activity to their medical school applications. Once involved, most stay with the program until they graduate.

Whatever their motivation, the volunteers reap a variety of benefits from the experience. "The ability to teach is a valuable tool," Alexander said — in any profession the volunteers pursue. Many participants agree that they have improved their presentation and communication skills. The most rewarding aspect for most is the sheer fun of seeing the students get excited about doing science.

One of the greatest challenges of teaching, the presenters learn, is to expect the unexpected and to adjust lesson plans on the fly. Surprising questions, experiments that don't always go as planned and the different learning levels of third through

Record

Washington University community news

News & Comments

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Medical School Update

Genetic testing advised for liver illness during pregnancy

BY DIANE DUKE WILLIAMS

In the third trimester of pregnancy, some women are struck suddenly by swelling, severe nausea, vomiting or jaundice — symptoms of an illness called acute fatty liver of pregnancy (AFLP). These women and their partners sometimes have passed on a genetic mutation that prevents their babies from processing certain fats for energy. In severe cases, the genetic defect can result in a baby's death.

To save lives, School of Medicine researchers are recommending that women with AFLP be screened, along with their partners and children, for this mutation, which is called E474Q. They published their study in the June 3 issue of the New

"The main message here is that families should be tested before the babies are born so that the babies can be appropriately treated and death can be prevented."

ARNOLD W. STRAUSS

England Journal of Medicine. "The main message here is that families should be tested before the babies are born so that the babies can be appropriately treated and death can be prevented," said Arnold W. Strauss, M.D., professor of pediatrics, who headed the study. "It's also important to test families so they can be appropriately advised about the risk of the mothers having the same sort of liver disease with future pregnancies."

Babies born with this mutation usually get acutely ill when they are a few months old. They suffer from a variety of conditions, ranging from liver failure to heart muscle and skeletal muscle disorders to sudden death. Each baby has a defect in an enzyme called long chain 3-hydroxyacyl-CoA dehydrogenase (LCHAD). When faulty, this enzyme can't complete its mission of breaking

down fatty acids. Sugars provide fuel for four or five hours following a meal, then the body uses fatty acids as an energy source. For babies with the mutation, this is not possible.

The E474Q mutation is recessive, which means that a baby with the disorder needs to inherit one copy of the defective gene from each parent in order to develop the disease. A mother who carries just one defective copy is healthy until she becomes pregnant with a baby who has inherited the mutated gene from both parents.

AFLP occurs in approximately one in every 14,000 pregnancies. Strauss and colleagues identified the E474Q mutation in 1995. Prior to this discovery, no one knew the cause of liver

problems in pregnant women once hepatitis was ruled out.

There were still many unanswered questions about AFLP, however. Mothers whose children carried the E474Q mutation did not always get sick, and the incidence of this mutation in mothers with AFLP remained unknown. These puzzles spurred Strauss and colleagues to study 24 families whose children were known to have an LCHAD deficiency or a deficiency in the large protein complex that contains LCHAD.

Analyzing the gene for the protein subunit where LCHAD is found, the researchers discovered that 19 children who became very ill had a defect in LCHAD. Eight had two doses of E474Q. The remaining 11 children had this mutation on one chromosome and a different mutation in the same gene on the other chromo-

some. So they were unable to make a functional enzyme. Seventy-nine percent of the mothers developed AFLP or another liver disorder called HELLF — hemolysis, elevated liver enzymes and low platelets. But five children didn't have the E474Q mutation, and none of their mothers developed liver disease during pregnancy.

One of the families in the study, Jennifer and John Carroll of Prairie-du-Sac, Wis., lost their first child, Sarah, when she was 5 months old. Sarah had developed an ear infection and a week later was diagnosed with the flu. She had a poor appetite and, over a two-week period, developed low blood sugar and lethargy, common symptoms of the deficiency. She died on the way to the emergency room. "The autopsy said she had a fatty liver, but the doctors couldn't tell us what she

died of," said Jennifer Carroll.

When Jennifer was almost seven months pregnant with Sarah, she experienced liver problems and was incorrectly diagnosed with hepatitis. She was sent home and later had to be rushed to the hospital for an emergency Caesarean section.

Six months after Sarah died, the Carrolls decided to have another child. Jennifer's doctor told her not to worry about having the same problems during her second pregnancy. But during the sixth month of her second pregnancy, Jennifer became ill and doctors found that her liver enzymes again were elevated and her platelets were low. She underwent an emergency Caesarean, and her daughter, Jane, was born almost three months early.

After Jane's birth, a genetic counselor called the Carrolls and

asked if they wanted to participate in a study involving LCHAD deficiency. When Strauss tested the Carrolls' blood, he found the defective form of the LCHAD gene in both parents. Jane, now 5, is doing well. She is fed a special formula every three hours to keep her energy up. In April, Jennifer gave birth to another daughter, Megan. Through genetic testing before birth, the Carrolls found out Megan hadn't inherited the mutation.

Educating physicians and the public about these findings is important, Strauss believes, because of the potential impact on people's lives. "We now know that if the fetus carries the E474Q mutation, the mother runs the risk of life-threatening liver disease and the baby also can die," Strauss said. "So it's essential to screen pregnant women who develop AFLP and their families for this mutation."



Playing it safe David M. Jaffe, M.D., left, professor of pediatrics, cheers on Krystal Hagens, front, and Dominique Smith at the new Emerson Elementary School playground. Jaffe and a number of School of Medicine students helped build this playground through the St. Louis Children's Hospital Injury Prevention Program, of which Jaffe is co-medical director. The \$42,000 playground has rubberized mats and safety surfaces to reduce injuries from falls.

Committee helps medical school prepare for Y2K

The multitude of computers and medical equipment at the School of Medicine makes tackling potential Y2K glitches an enormous undertaking. But the school's Y2K committee, which has been meeting for almost a year, says the medical school should be ready when the clock ticks 12:01 a.m. on Jan. 1, 2000.

"It's a huge project — bigger than anyone thought it would be — but all the organizations and departments are taking it very seriously and moving forward on fixing any problems that develop," said Edwin K. Hinrichs, Y2K committee co-chair and executive director of anesthesiology. "We feel pretty confident that when we turn the year over, we either will have everything fixed or any problems that develop will be minor."

An outside consulting firm, Alternative Rescues Corp., has provided expert guidance to the committee, which is made up of information systems directors, business directors and administrators.

Each medical school department and organization is responsible for its own Y2K preparedness, but the committee is helping the groups by preparing a timeline beginning with inventory through risk assessment through testing. It also has established a clearinghouse.

The clearinghouse is a central database of technical information for all departments. If the Depart-

ment of Orthopedic Surgery, for instance, needs to find out whether to test a certain piece of equipment for Y2K readiness, the clearinghouse can tell the department if another group already has done so.

"Another purpose of the clearinghouse is to monitor and report to the executive faculty where each department and organization stands," Hinrichs said. "This way, we can assess the risk of the school."

In making sure it's prepared for Y2K, the medical school has been working very closely with BJC Health System, sharing clinical equipment information and technical expertise. "I think this has been an excellent example of our synergy," Hinrichs said. "Each of us depends on the other a great deal."

In general, if medical school employees have concerns about computers or equipment in their area, they can visit the Y2K web site at <http://y2k.wustl.edu> or talk with their department's business manager, information technology director or Y2K coordinator. They also can call the Y2K clearinghouse at 747-1000.

Hinrichs stresses that his committee needs the help of all employees. "The more support we get from the user community, the easier it's going to be on those who are charged with the responsibility of accomplishing this task," he said.

Sex differences and drug dependence focus of study

School of Medicine investigators want to learn whether sex differences affect the way our brains react to drugs. Neuroscientist Theodore J. Cicero, Ph.D., vice chancellor for research and professor of neuropharmacology in psychiatry, has received a five-year \$1.7 million grant to study biological gender differences and their impact on drug dependence, drug tolerance and the ability of drugs to prevent pain. The grant is from the National Institute of Drug Abuse (NIDA).

This funding, which represents a competitive renewal of a grant he has held for the past 28 years, will allow Cicero and colleagues to take a closer look at preliminary findings indicating differences in how male and female animals react to opiate drugs.

"Typically, most of us consider a rat or a mouse to be a rat or a mouse, and sex has been considered irrelevant," Cicero said. "But we began to suspect some time ago that the same doses produced different analgesic effects on males and females. We went to the scientific literature to learn about other research into differences between the sexes, and very little was out there."

So Cicero and colleagues began studying ways in which male and female rats react differently to drugs. The rat is

ideal for research into these questions because there are no gender roles or other psychosocial factors that confound most studies in humans, Cicero said.

"There is research to show, for instance, that if a college-age male participates in an experiment assessing pain that's run by a female lab assistant, he will tend to act macho and won't report pain as readily," Cicero explained. "But if a male lab assistant is running the experiment, it's more likely that the male volunteer will admit that a painful stimulus hurts."

Other researchers have noticed gender differences in drug abuse and dependence. Some believe that women are less likely to abuse drugs because of social influences. There also is a belief that men have more stress that could contribute to drug abuse. But Cicero and colleagues want to learn whether biological differences might actually play a more important role than gender identity issues.

Cicero has spent three decades looking at the influences of hormones and steroids on the brain, and he believes that sex steroids such as testosterone might influence how the brain reacts to drugs such as morphine and other opiates.

In preliminary studies, the investigators have found that

female rats require higher doses of opiates in response to a painful stimulus than do males for the same level of pain relief, a finding that could have significant implications for the treatment of pain in men and women.

They also have found that when the rats are trained to push a bar in order to receive an intravenous dose of opiate drugs, females will continue to push the bar for much higher doses than males — long after the males are content with their dose. And when an animal has to work harder by pushing the bar numerous times before being rewarded with a single dose, males will stop between 32 and 64 presses whereas many females have pushed the bar up to 400 times in order to get a dose.

According to Cicero, these data suggest that females find morphine or heroin more reinforcing than do males and, therefore, will work harder for the same drug and dose.

"What does this mean for people?" Cicero wondered. "I don't know, but our data are beginning to suggest that there may be some biological differences in the brain's vulnerability to abuse which needs to be examined in clinical situations. If similar sex differences are found in humans, we may need to reexamine the ways we look at drug abuse in men and women, particularly with respect to prevention and treatment strategies."

University Events

Japanese Textiles • Tourette Syndrome • Hip Replacement • Jazz Series

"University Events" lists a portion of the activities taking place at Washington University through July 17. For a full listing of medical rounds and conferences, see the School of Medicine's website at medschool.wustl.edu/events/. For an expanded Hilltop Campus calendar, go to www.wustl.edu/thisweek/thisweek.html.

Exhibitions

"Terra Incognita." Through July. Early printed accounts of exploration and cultural encounters in the New World. Special Collections, level 5 Olin Library. 935-5495.

"Structure and Surface: Contemporary Japanese Textiles." June 19 through Aug. 15. Sponsored by The Asian Art Society and the Joint Center for East Asian Studies. Fiber arts by leading designers and fabricators. St. Louis Art Museum. 721-0072, ext. 204.



Nearing completion Work on the South 40's new residential houses continues on schedule. Workers are relocating the walkway between the ball fields, landscaping and installing a brick patio. A clock tower will stand at the intersection of Shepley Drive and the walkway, serving as a focal point. The project will be completed in August.

Lectures

Friday, June 11

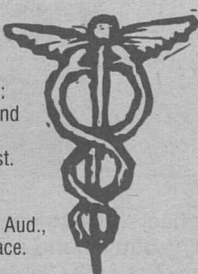
9:15 a.m. Pediatric Grand Rounds. "Muscles and Proteins." Alan L. Schwartz, the Harriet B. Spoehrer Professor of Pediatrics and head of dept., prof. of molecular biology and pharmacology. Clopton Aud., 4950 Children's Place. 454-6006.

Monday, June 14

4 p.m. Immunology Research Seminar Series. "Functional Significance of NK Cells in Host Responses in Vivo." Wayne M. Yokoyama, prof. of medicine. Eric P. Newman Education Center. 362-2763.

Friday, June 18

9:15 a.m. Pediatric Grand Rounds. "Neurobiology of Tourette Syndrome: Recent Advances and Future Directions." Jonathan Mink, asst. prof. of neurology, neurobiology and pediatrics. Clopton Aud., 4950 Children's Place. 454-6006.



Wednesday, June 23

6:30 a.m. Orthopedic surgery distinguished lecture. "Why We Left Charley Total Hip Replacement." John J. Callaghan, prof. of orthopedic surgery, U. of Iowa. Scappellato Aud., first floor, Mallinckrodt Institute of Radiology, 510 S. Kingshighway Blvd. 747-2803.

Music

Thursday, June 17

8:30 p.m. Holmes Jazz Series. Eric Markowitz Trio. Holmes Lounge, Ridgley Hall. 935-4841.

Thursday, June 24

8:30 p.m. Holmes Jazz Series. Paul DeMarinis Trio. Holmes Lounge, Ridgley Hall. 935-4841.

Thursday, July 1

8:30 p.m. Holmes Jazz Series. Guitarist Dave Black. Holmes Lounge, Ridgley Hall. 935-4841.

Thursday, July 8

8:30 p.m. Holmes Jazz Series. Guitarist Rob Block. Holmes Lounge, Ridgley Hall. 935-4841.

Sunday, July 11

7:30 p.m. Gateway Festival Orchestra performance. 1904 World's Fair concert. Brookings Quadrangle. 569-0371.

...And more

Tuesday, June 22

8 a.m. STD/HIV class lecture and practicum. "STD Update Course for Advance Practice Nursing Students." (Also June 24, same time). Cost: \$65. U. of Mo.-St. Louis, 8001 Natural Bridge. To register, call 747-0294.

Bohemian

University architects help in redevelopment

— from page 1

that there was not enough left here, that there was not enough density or context for a historic district," Toft said. "That is correct, but when you come out to the site, you realize that it is a prime location with phenomenal vistas taking in the wonderful silhouettes of nearby church steeples. It has tremendous potential. Jo and Don were willing to take the leap, and it has led to a wonderful partnership and a real commitment to reinvent the city."

During the 1998 spring semester, two of Royse and Toft's graduate architecture students, Jill Nishimoto and Rohn MacNulty, designed contemporary housing units for the site as part of a theoretical design project. After receiving favorable feedback from the community, Royse and Toft decided to expand upon these initial themes and pursue an actual housing development.

The Youth Education and Health in Soulard (YEHS)

organization, which runs the local YouthBuild program and has worked closely with Landmarks, joined the effort and secured a \$100,000 grant from the Missouri Department of Economic Development. Toft also helped form the Bohemian Hill Steering Committee, made up of homebuilders, residents and business and civic leaders.

Royse and Noero were hired last fall to design prototype homes and create an overall site plan and model for the project, which includes public green space. Their proposal is the result of months of fine tuning based on community input. The YEHS grant, which will cover part of the construction cost of the first two homes, funded the overall preliminary design work, including the site model built by Amit Patel, a 1997 graduate of the School of Architecture. Additional funding is being sought for the remaining homes, which would vary in size and design, and for restoration and conversion of the historic buildings.

Construction on the first two homes is expected to begin this summer with the houses ready for occupancy next spring. YouthBuild will provide much of the labor for the new residences,

which have an estimated market value of \$125,000 each.

The two-story, 1,300-square-foot homes will have private outside decks, skylights, living rooms with bay windows, three bedrooms, kitchen and dining areas, and a side entrance to reduce the need for hallway space inside. Brick will wrap around the exterior façade to the side entryway and complement the character of the neighborhood's historic buildings.

"We wanted to design a unit that is as compact as possible, but still gives all the amenities and offers a quality and grace to the neighborhood," Royse said. "The houses are designed to create a real sense of community identity."

Bob Brandhorst, YEHS executive director, said the project is ideal because it will train YouthBuild participants for jobs in new construction. "Our work in the past has focused on renovation of older buildings," he said. "This is the first time the young people will be able to help build new housing and use new, sustainable building materials and techniques. The contemporary quality of the design also will really drive the evolution of the neighborhood."

Wealth of free music provided summer concert-goers on campus

Looking for a pleasant way to pass lazy evenings before next semester's academic onslaught? This summer, the Holmes Jazz Series and the Gateway Festival Orchestra will conspire to help campus concert-goers mark time with a wealth of free music.

Now in its second year, the Holmes Jazz Series presents St. Louis musicians in Holmes Lounge at 8:30 p.m. Thursdays throughout June and July. The series kicks off June 17 with the Eric Markowitz Trio and continues June 24 with the Paul DeMarinis Trio. Other dates are: July 1 with guitarist Dave Black; July 8 with guitarist Rob Block; July 22 with Hands Down; July 29 with pianist Duane Estes; and Aug. 5 with the Ben Looker Quartet. For further information, call 935-4841.

The Gateway Festival Orchestra, now in its 29th season, performs at 7:30 p.m. Sundays in July and August in Brookings Quadrangle. The series — under the direction of conductor

William Schatzkamer, professor emeritus in the Department of Music in Arts and Sciences — opens July 11 with a recreation of a 1904 World's Fair concert, featuring the music of Mozart, Mendelssohn and Grieg. Subsequent performances July 19 and 25 and Aug. 1 will feature works by Beethoven, Brahms, Ellington, Tchaikovsky and others.

In the event of rain, the orchestra will perform in Graham Chapel at the same hour. For further information, call 569-0371.

The Holmes Jazz Series is sponsored by the College of Arts and Sciences, the Department of Music, the Office of Student Activities and Campus Life. The Gateway Festival Orchestra is sponsored by Washington University, the American Federation of Musicians, the Recording Industry Trust Fund, the Arts & Education Council of St. Louis, the Regional Arts Council, the Missouri Arts Council and Emerson Electric Co.

Under construction

Two road improvement projects on Big Bend Boulevard may cause traffic delays for motorists until the projects' completion Aug. 1. The University is adding a center turn lane for south-bound motorists turning left onto Shepley Drive, and the county is widening the right turn lane onto Forsyth Boulevard. Motorists might want to find alternate routes.

Shaping up

Looking for one last chance to shape up for the summer? The Campus Y has three opportunities for the fitness-minded.

• **Kickboxing** — Take the best part of an aerobic workout and mix it with the best parts of a karate class for a safe, fun and effective workout. Classes run June 21 through July 21, Mondays and Wednesdays, from 6-6:45 p.m., in Mallinckrodt 100A.

• **Y Step Aerobics** — This class will work you through intense calisthenics to tone and slim and down all major muscle



Campus quiz: Appropriate anywhere at the University, this open book graces which Medical Campus building? Answer below.

groups. Classes run June 22 through Aug. 12, Tuesdays and Thursdays, from 6-7 p.m., in Mallinckrodt 100A.

• **Hatha Yoga** — Maintain the body, enhance the mind and discover the joy of learning yoga warm-ups and postures that encourage deep breathing, stretching, balance and relaxation. Classes run July 7-28, Wednes-

days, from 6-7:30 p.m., in Lambert Lounge.

Fees range from \$30-45, depending upon the class. To register, call the Campus Y at 935-5010.

Support grows

The American Association of Fund-Raising Counsel Trust for Philanthropy has released its annual survey, "Giving USA," which shows that Americans gave \$24.6 billion to education in 1998, a 10.8 percent increase over the previous year. The support for education was exceeded only by the amount donated to religious organizations, which raised \$76.1 billion in 1998.

Answer: The book is above the entrance to the Biotechnology Building, formerly the School of Dentistry, on Scott Avenue.

"News Briefs" includes short items on a wide range of subjects, including information about resources, benefits and opportunities available to faculty and staff. Readers are invited to submit briefs, which will be used as space permits, to Betsy Rogers, Campus Box 1070, or by e-mail, betsy_rogers@aismail.wustl.edu.

Computing's Hirschbeck wins White award on Staff Day

Denise Hirschbeck, associate director of computing and communications-information systems, was awarded the second annual Gloria W. White Distinguished Service Award on Staff Day for her exceptional effort and contributions to the betterment of the University during her 28 years of service.

She started her career here as a work order clerk in maintenance and moved up through the ranks before switching to the department now known as information systems to work as a programmer analyst in 1980. She later worked as a systems analyst and assistant director before taking on her current role.

"She is described as an eternal optimist," Chancellor Mark S. Wrighton said as he announced the award. "It is not uncommon to hear descriptions of her that include adjectives like enthusiastic, energetic, unselfish, dedicated, loyal, conscientious — a person who gets the job done."

The award is named for Gloria W. White, who retired in 1997 as vice chancellor of human resources after 30 years at the University.

Hirschbeck has led numerous project teams in Information Systems and has helped develop systems in many departments. She worked in admissions from 1994

through 1997 to improve operations and support.

"The people who have worked with her have the highest regard for her accomplishments, respect her professionalism and enjoy working with her," Wrighton said.

He added that Hirschbeck has sought out opportunities to interact with students by volunteering for April Welcome activities and contacting prospective minority students to answer questions and to encourage them to consider attending the University.

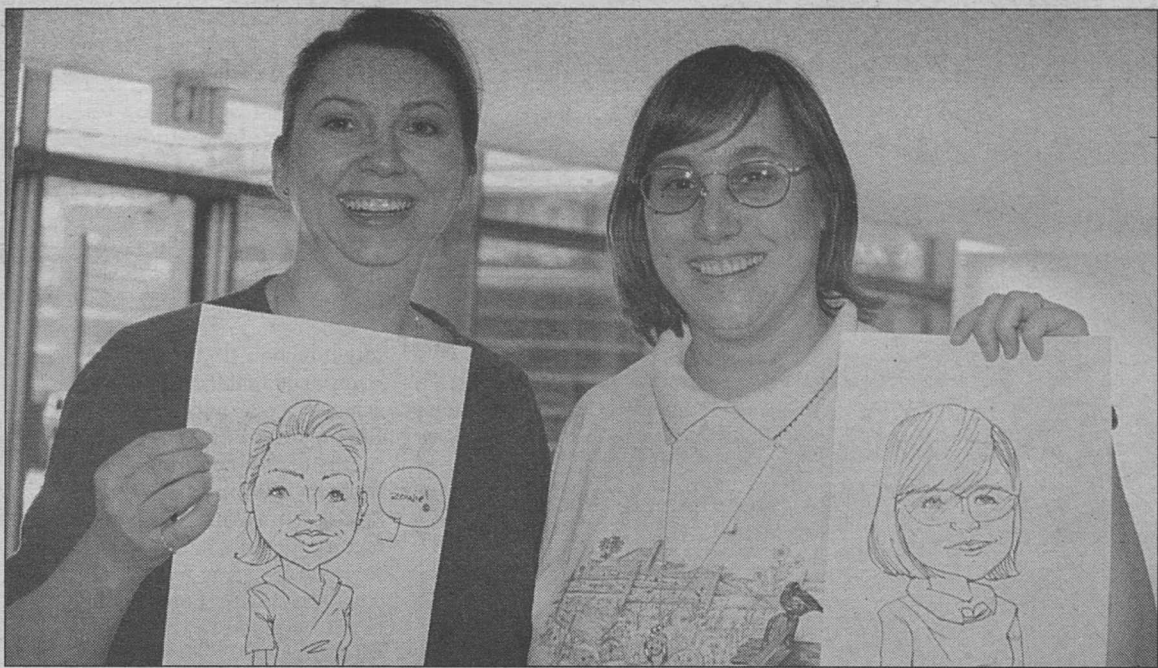
"She is a wonderful example of a person whose career has grown through hard work and contribution; a person who has furthered her education by taking advantage of employee tuition assistance benefits, obtaining both an undergraduate and graduate degree from Washington University; a person who embodies the principles and work ethics that allow Washington University to grow and attract the best students and the best employees," Wrighton said.

Hirschbeck thanked her co-workers and her "bosses" — Harry Riedmeyer, Hardy Fuchs, Bill Smith and John Berg — and gave special acknowledgement to her parents and husband Rick as she accepted the award.

The couple was supposed to be on vacation the day of the ceremony.

"I was completely surprised," she said. "When we found out about the award, we postponed leaving until Monday evening after the ceremony."

She said the \$1,000 award came in handy during their camping and motorcycle expedition to New Mexico and Arizona.



Robin Williams of Accounting Services and Nancy Rubin of the Materials Science and Engineering Program proudly display their caricatures at Staff Day. Three University artists were on hand for the festivities.

1,035 turn out for 24th Staff Day

BY CHRISTINE FARMER

Clouds didn't dampen the spirits of more than 1,000 staff members participating in the 24th annual Staff Day May 17.

Events kicked off at 10:30 a.m. with the Staff Service Award and Recognition Ceremony in Edison Theatre, hosted by Chancellor Mark S. Wrighton and John R. Loya, vice chancellor for human resources.

"You have made Washington University the great place that is," Wrighton told the assembled audience. "Washington University is one of the largest employers in our region and one of the best employers because of the employees. I want to thank you for all you have done."

Department heads recognized 185 staff members for reaching important milestones in years of University service (*see listing below*). Co-workers enthusiastically showed their support with cheers, chants and banners as honorees accepted their awards. Genevieve L. Gaines, director of commencement, received a roaring standing ovation for her 53 years of service.

Wrighton concluded the ceremony by honoring Denise Hirschbeck, associate director of computing and communications-information systems, with the second annual Gloria W. White Award (*see story, above left*).

After the ceremony, the crowd made its way to Mallinckrodt Center for lunch, which many chose to eat outdoors in Bowles Plaza.

The crowd dispersed after lunch for a variety of activities. Sixty golfers took to the links at Forest Park. In the Athletic Complex, University Police took on a team made up of various West Campus staff in a game of volleyball. The police emerged victorious.

On the softball diamonds, five teams — from the offices of Facilities, the School of Business, Public Affairs, Accounting Services and Computing and Communications — slugged their way through the afternoon. The team from Computing and Communications retained their championship title from last year, beating out the business school. Wrighton donned a glove and played for the Accounting Services team.

In golf, sisters Lisa Siddens and Linda Trower gave a repeat performance of last year's tournament, earning the women's trophy again. Siddens works in Arts and Sciences and Trower in the Department of Physics in Arts and Sciences. The team of Steve Norkaitis and Chris Callan, both of Medical Public Affairs, won the men's division, and Beverly Owens and Pete Milne, both of the School of Law, took the mixed pair.

Mindy Thurmond of Major

Gifts was awarded first place in the arts and crafts show for three charcoal drawings. Jean Kirby of chemical engineering won second with a quilt, and Kimberly Mount of the philosophy department claimed third place with her elephant afghan.

A new addition to the day, free caricature drawings, was a hit and is likely to be continued next year.

"People really loved those caricatures. The artists had a steady line for almost two hours," said Ann Prenatt, director of employee relations and human resource management.

Sporting event champions were presented with trophies, and winners of the arts and crafts show received plaques at the end of the day in Bowles Plaza. Three lucky employees won drawings — two for a pair of airline tickets to anywhere in the domestic U.S. and one for a year's membership to the McWilliams Fitness Center.

Linda Poeppelmeier of Public Affairs and Gregory Avellone of Computing and Communications won the tickets, and Donna Boevingloh of Accounting Services won the membership.

While Wrighton thanked Prenatt for all her work in making the day a success, Prenatt passed along the credit to the Staff Day committee headed by Blanche Johnson of Human Resources.



Denise Hirschbeck, associate director of computing and communications-information systems, shares a hug with Gloria W. White, former vice chancellor for human resources, upon receiving the Gloria W. White Distinguished Service Award at Staff Day.

185 employees honored for steadfast service to University

The Staff Service Award and Recognition Ceremony, held May 17 in Edison Theatre as part of the annual Staff Day festivities, honored 185 employees for their years of service to Washington University. Those with 10 years of service received a pen-and-pencil set; 15 years of service, a gold medallion clock; 20 years of service, a gold pen-and-pencil set; 26 years of service, a gold time-piece bearing the University seal; and those with more than 26 years got to choose from about a dozen items that included a vase, jewelry and a clock.

Awards were given to people with various years of service since many with more than 26 years have not been honored for that longevity before. Next year, in addition to recognition for 10, 15, 20 and 26 years, awards will be given for 30 or more years of service in five-year increments.

The honorees are:

Ten years of service:

Patricia Ann Agnew, University College; Dennis J. Ainley, maintenance; Joseph A. Angeles, public affairs; David E. Anglin, Office of Network Coordinator; Diane M. Anthony, Parkview Properties; Carol M. Antoniewicz, Olin Library; Matthew K. Arthur, student computing; Rhonda L. Bennett, Residential Life Center; Barbara L. Bequette, psychology; Dana L. Beth, Olin Library; Georgia L. Binnington, School of Art; Ernestine R. Blanchard, admissions; Michael D. Brainer, computing facilities; Sandra J. Brennan,

School of Architecture; Rose C. Brower, School of Engineering and Applied Science; Carol Ann Brown, Olin Library; Jane W. Brown, human resources; Gary N. Broyles, chemistry; Karen A. Busch, School of Business; Felicia M. Campbell, engineering; Martin A. Cavanaugh, Olin Library; Ronald J. Collins, athletics; Mary M. Costantin, Alumni and Development Programs; Doyle A. Cozadd, Consortium for Graduate Study Management; Margie E. Craig, business; Bonita Crape-Williams, biology; Charles B. Cummings, maintenance; Jane E. D'Amico, business; Mary Ann Davis-Simmons, accounting services; Fairris L. Dean, biology; Teri L. Dent, School of Law;

Therese J. Dent, School of Social Work; Rita F. Drochelman, engineering; Gerry Everding, public affairs; Nancy Kay Galofre, University House; Phillip Gann, maintenance; Anne B. Gibson, art; Susan M. Halvorson, law; David Cutts Jones, development services; James W. Jones, business; Dency B. Kahn, Olin Library; Larry H. Kindbom, athletics; Joyce M. Kniepkamp, computing facilities; Elaine D. Knote, health services; Mary R. Knubley, maintenance; Brenda L. Kopsie, physical facilities; Nancy M. Lutz, development services; Douglas M. March, physical facilities; Linda K. Marcus, student activities; Deborah L. Marks, purchasing office; Cynthia G. McCain, accounting services; James Michael McGuire, maintenance; Dennis R. Nagy, chemistry; Elizabeth A. Peterson, executive vice chancellor's office; Daniel A. Pickett, Olin Library;

Elaine E. Pittaluga, public affairs; Mary V. Politte, health services; Laura H. Ponte, alumni and development programs; Anne Marie Posega, Olin Library; Steven Gerard Rackers, architectural and engineering design services; Louis P. Recht III, architectural and engineering design services; Patrick J. Reed, computing facilities; Glennon J. Reitz, social work; Randy Richards, engineering; Raye L. Riggins, African and Afro-American Studies; Thomas F. Rocchio, engineering; Noreen H. Satterlee, admissions; Phyllis R. Schomaker, law; Sharon Stahl, Arts and Sciences; Daman Todd Steelman, physics; Cynthia G. Steenberg, development services; Mary M. Vanicelli, engineering; Lloyd H. Vanwinkle III, engineering; Martha C. Vicente, Arts and Sciences; David D. Waddell, maintenance; Renita Lynn Weathersby,

maintenance; Steven G. Westlund, computing facilities; Elizabeth C. Williams, student affairs; Christine F. Wyrick, business.

Fifteen years of service:

Christen W. Bayless, telephone services; Mary Ellen Benson, public affairs; Diana R. Blanchard, Consortium for Graduate Study Management; Kevin C. Bradley, Euclid power plant; Robert W. Browning, computing facilities; Susan M. Collier, admissions; Anna Mae Cooper, Arts and Sciences; John C. Davidson, maintenance; Faye Wood Douglas, physical facilities; Janet L. Douglas, development services; Kary N. Eckrich, physical facilities; Omar Galal El-Ghazzawy, chemistry; Dorothy Elliott, executive vice chancellor's office; Geraldine Marie Fisher, research office; Elizabeth M. Gavin, admissions; Linda Glassner, business; Todd A. Hardt, physics; Richard William Heuermann, earth and planetary sciences; Mae Hollander, alumni and development; Diane Marie Indelicato, business;

Melvin A. Ingram, accounting services; Ronald L. Janssen Jr., physical facilities; Barbara Ann Jones, Consortium for Graduate Study Management; William R. Jones, maintenance; Robert B. Keeney, computing facilities; Robert L. Mahurin, maintenance; Barbara B. McKay, business; Annette I. Milford, Center For Political Economy; Frannie Niemeyer-Murphy, engineering; Martin A. Olevitch, physics; John Paul Pirozzi, alumni and development; Marilyn Pollack, financial planning; Barbara Rea, public affairs; James R. Sidwell, business; Carole S. Swindle, engineering; Karen E. Swiney, accounting services; Nanette Tarbouni, admissions; Robert J. Thomas, engineering; Larry D. Turnbough, maintenance; James A. Venegoni, maintenance; Paula S. West, computing facilities; William H. Wibbing, Olin Library; Leslie S. Will, education; James C. Yanni, shuttle services.

Twenty years of service:

Thomas W. Biehl, maintenance; Sandra S. Blaylock, building services; Annette M. Crain,

engineering; Wilbert A. Fritz, computing facilities; Joan B. Greenberg, biology; Leon Hofmann, maintenance; Barbara Luszczynska, Olin Library; Allen Paul Rueter, engineering; John Michael Schaal, athletics; David L. Schilling, Tyson Research Center; Jane E. Schnettler, engineering; Dolores H. Warters, accounting services; Reginald Whitaker, Olin Library; Barbara B. Winters, architecture.

Twenty-six years of service:

Arlene C. Boulding, Student Counseling Services; Joyce A. Edwards, Arts and Sciences; Lynn C. Imergoot, athletics; Terrence Harold Keegan, Olin Library; Myron A. Komarynsky, chemistry; Jane Nothaker, treasury services; Richard Allen Schmaeng, physics; Elery M. Sharp, research office; David A. Tanner, physics; George Michael Veith, biology; Donna B. Williams, engineering; Myron D. Wilson, Euclid power plant.

Thirty years of service:

John Wayne Augustin, computing facilities; Janet Bowdry, Olin Library; Robert H. Easton, Student Counseling Services; Linda Y. Ford, admissions; Henry Leon Key, purchasing; William F. Loddell, computing facilities; Irma P. Morose, biology; Mary Kay Shehan, business; Thomas Harry Simmons, Arts and Sciences; Patrick Dennis Swan, physics; Carolyn Audrey Yarber, Olin Library.

Thirty-one years of service:

Donna Lee Battershell, alumni and development; Susan Elaine Felps, engineering; Andrew Lee Hargrove, engineering; Helen L. Mitchell, Olin Library; Jane Ellen Rahmoeller, earth sciences; G. Scott Robinson, computing facilities.

Thirty-two years of service:

Joe L. Kastner, maintenance; Marianna Mercurio, Olin Library; Judith Edna Richardson, Health Services; Carol F. Shearrer, business; Bill D.

Smith, computing facilities; Christine Smith, art; Audrey P. Whittenberg, computing facilities.

Thirty-three years of service:

Luberta Rochelle, Olin Library.

Thirty-four years of service:

Barbara Jean Johnson, computing facilities; F. William Orrick, telephones.

Thirty-six years of service:

Nathan Walker Eakin, Olin Library.

Thirty-seven years of service:

John W. Epstein, physics; Edward Francis Lanig, maintenance.

Thirty-nine years of service:

Ronald Dickson, University Police.

Forty years of service:

Myrl L. Funk, architecture.

Forty-one years of service:

Josephine H. Simpson, athletics.

Forty-two years of service:

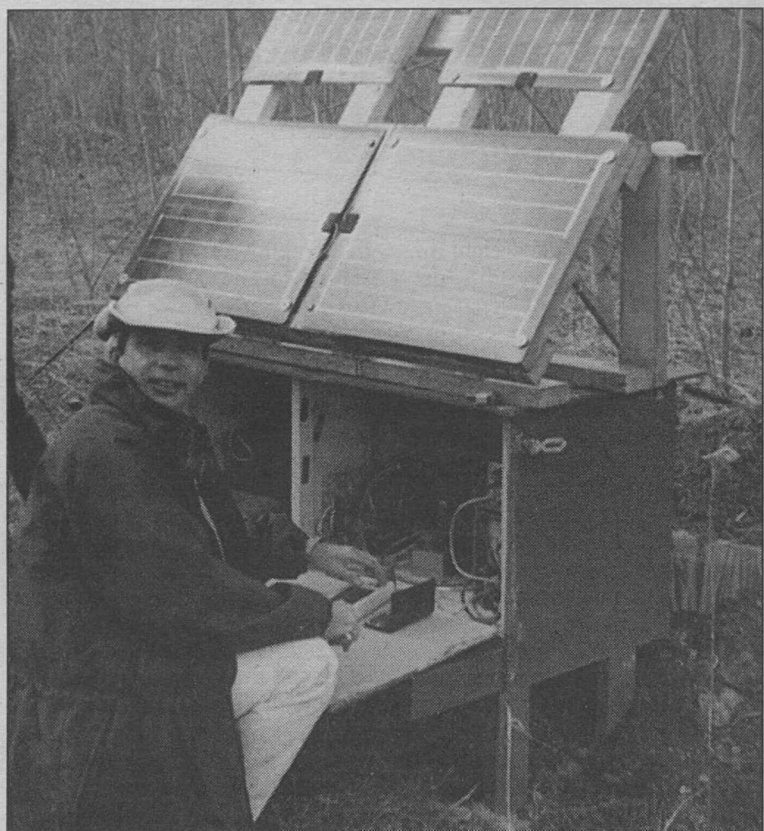
Carol E. Hogan, Career Center.

Forty-eight years of service:

Carol Anita Sagner, Arts and Sciences.

Fifty-three years of service:

Genevieve L. Gaines, commencement.



Patrick Shore, Ph.D., computer specialist and lecturer in earth and planetary sciences in Arts and Sciences, retrieves seismic data from a seismograph station outside of Slippery Rock, Pa. Shore was a member of a seismological team that installed the Missouri-to-Massachusetts network, a first-of-its-kind array of 18 sophisticated seismographs stretching from Washington University's Tyson Research Center to Harvard University.

Seismometers

Unique network looks inside Earth

— from page 1

know that slabs of ancient sea floor sink to the base of the mantle, and we expected to see a gradual change as the slabs spread across the top of the core and heat up. Instead, we saw a very sudden change. Two thousand miles beneath Alaska, the S waves travel fast and the P waves are slow. Then as you travel south, they suddenly switch: The P waves are fast, and the S waves are slow. It is like standing on a shoreline with the continent on one side and the ocean on the other."

Wyssession explained that the rock at the base of the mantle beneath Alaska used to be part of the Pacific Ocean sea floor, but sank into the mantle more than one hundred million years ago, descending all the way to the top of the core. As this cold rock reaches the bottom of the mantle, it pushes aside what is known as a chemical boundary layer into two large lumps, one beneath the central Pacific and one beneath western Africa, that serve as the birthplace for most of the Earth's hot spot plumes.

"The division between the ancient slab and the chemical boundary layer is quite distinct, meaning that the slabs don't spend much time at the top of the core," Wyssession said. "As soon as the slab rock heats up, it probably rises, and the chemical layer can be pushed aside a bit again, but not off the core."

Wyssession said that this is very similar to the surface, where mantle convection laterally pushes around the relatively buoyant continents, which are too light to sink.

The discovery of two distinct rock types at the base of the mantle and the evidence that they are moving laterally have historical significance as well. Plate tectonics, which describes how Earth's surface has evolved, got its start 30 years ago from the older theory of continental drift. Two of the most important continental drift features were the geological distinctions between the continents and oceans and the movement of the continents. Wyssession believes that we may be on the verge of similar discoveries about how the deep Earth has evolved.

"The other half of plate tectonics is going to be a distinct sort of mantle dynamics, different from the surface," he said. "We are just now piecing together the evidence that will give a full theory for how our planet works."

Wyssession is continuing to analyze the MOMA data and expects to find further clues to the function of the core-mantle boundary as the repository of ancient sea floor slabs and source of hot spot plumes. He has just received NSF funding to launch a similar study in 2001 that will analyze seismic data from an array of seismometers stretching from Florida to Edmonton, Alberta.

"We're getting much better glimpses of processes that shape the deep Earth and also an understanding of the circulation of rock from the surface to the core and back up again and how that shapes the evolution of our continents," Wyssession said.

Boeing program is model for collaboration

Thirteen Washington University graduate students and University and Boeing Co. mentors gathered in Room 101 Lopata Hall May 11 for a full-day symposium on collaborative research sponsored by the Boeing-McDonnell Foundation.

The topics ranged from novel target recognition techniques to composite materials and systems science to computation. The WU/Boeing program is considered a model of cooperation between industry and universities.

Students work closely with faculty mentors and Boeing researchers, using facilities at the corporation's St. Louis headquarters in addition to University laboratories.

For a number of the graduate students, the research forms a considerable part of their doctoral theses. The May event was the program's first formal symposium. Students gave 30-minute presentations of their research, much like those given at professional conferences.

Presenters, their topics, their faculty and Boeing engineer mentors were:

- Li Wu, "Accelerating Evolutionary Search with Speciation,

- Clustering, and Function Approximation Techniques," Mark J. Jakiela, Ph.D., the Lee Hunter Associate Professor of Mechanical Engineering, and Bruce Dike;

- Yanyu He, "Active Flow Control Applied to an Airfoil," Linda D. Kral, Ph.D., associate professor of mechanical engineering, and John Donovan;

- Marina Spivak, "An Object-Oriented Framework for Developing High-performance and Real-time Middleware," Douglas C. Schmidt, Ph.D., associate professor of computer science, and Bryan Doerr;

- Debert Hart, "Visual Monitoring of Large Distributed Systems," Catalin Roman, Ph.D., professor and chair of computer science, and Bruce Perrin;

- Matt Cooper, "Automatic Target Recognition Using Radar Links and Lidar Sensors," Joseph A. O'Sullivan, Ph.D. associate professor of electrical engineering, and Chris Martens;

- Andrea Serrani, "Robust, Adaptive and Nonlinear Control of Uncertain Systems," Alberto Isidori, L.D., professor of systems science and mathematics, and Kevin Wise;

- Daniel Harres, Matt

- Baumgart and Metin Oz, "Statistical Signal Processing Techniques for Hyperspectral Imaging," Daniel R. Fuhrmann, Ph.D., associate professor of electrical engineering; Donald Snyder, Ph.D., the Samuel C. Sachs Professor of Electrical Engineering; and Andy Oldroyd;

- Bob Akl, "Computation of Tradeoffs in Wireless, Broadband Wireless, and Satellite Broadband Networks," Manju V. Hegde, Ph.D., and Paul S. Min, Ph.D., associate professors of electrical engineering, and Bill Hanna;

- Mary Malast, "Advanced High Cycle Fatigue Life Assurance Methodology," Kenneth L. Jerina, D.Sc., the Earl E. and Myrtle E. Walker Professor of Engineering, and Charles Saff;

- Ke Xu, "Affordable Composite Materials for the 21st Century," John L. Kardos, Ph.D., the Lucy and Stanley Lopata Professor of Chemical Engineering, and Jim Kurz;

- James Ramsey, "Robust Output Regulation for Nonlinear Systems," Christopher I. Byrnes, Ph.D., dean of the School of Engineering and Applied Science and professor of systems science and control, and Kevin Wise.

AAAS

Two faculty members elected to academy

— from page 1

accomplishments and significant promise for the future."

Fellows are nominated and elected by academy members in a process involving two separate ballots. The principal criterion is high achievement in a candidate's chosen field, but the potential contributions of the nominee to the academy's interdisciplinary work also are considered.

Since the academy was founded in 1780 by a small group of scholar-patriots led by John Adams, it has worked to develop knowledge as a means of promoting the public interest and social progress. Past members have included Adams, Benjamin Franklin, George Washington, Daniel Webster, Henry Wadsworth Longfellow, Alexander Graham Bell and Albert Einstein. Currently, there are 3,500 fellows and 600 foreign honorary members.

Pollak and Robins' election brings the total number of members from Washington University to 22.

Pollak, who specializes primarily in economics and demography, has current research interests in economics of the family, price and cost-of-living indexes, and environmental policy. He is the author of three books and more than 70 articles. Pollak, recently awarded a fellowship from the John

Simon Guggenheim Memorial Foundation, teaches a graduate economic theory course and co-chairs the interdisciplinary Network on the Family and Economy, funded by a grant to the University from the John D. and Catherine T. MacArthur Foundation.

After receiving a doctoral degree from the Massachusetts Institute of Technology, Pollak, a member of Phi Beta Kappa, joined the faculty of the University of Pennsylvania, where he taught for 26 years. In 1990 he went to the University of Washington, and in 1995 he came to Washington University.

Robins earned a Ph.D. from Harvard University/Radcliffe College in 1951 and joined the faculty at the School of Medicine in 1954 as a research assistant in psychiatry. She is the former director of the Master Program in Psychiatric Epidemiology at the medical school and currently is on the faculty of the University's Program on Social Thought and Analysis. She also served as a lecturer and an adjunct associate professor of sociology in the College of Arts and Sciences from 1957 until 1991, and she sits on the administrative committee of the doctoral program for the George Warren Brown School of Social Work.

A world leader in psychiatric epidemiology research for more than 40 years, Robins also has been honored this spring with a special Presidential Commendation from the American Psychiatric Association.

tion and appointment as an honorary fellow in the Society for the Study of Addiction to Alcohol and Other Drugs. The awards were presented in recognition of her work in the area of child development and its impact on mental health.

The academy's national induction ceremony will be Oct. 2 in Cambridge, Mass.

New chair

Van Cleves endow A&S professorship

— from page 1

the Reunion Gift Committee for 1991 and as a member of both the Eliot Society Membership Committee for Arts and Sciences and the Art/Fashion Show Committee. She has been especially active in the establishment of scholarships and was a contributor to the recent renovation of Graham Chapel.

Bill Van Cleve received a J.D. from the law school in 1953. He has served on the University's Board of Trustees for 16 years, including a term as chairman from 1993 to 1995 and two terms as vice-chairman, the position he currently holds. In 1995, he was elected a life trustee and chaired the search committee that resulted in Wrighton's appointment as chancellor. He was a major force in the law school's successful campaign for a new building, completed in 1997. He continues to serve on the law school's National Council, after having been chair for seven years.

Bill Van Cleve is a partner and the former chairman of Bryan Cave, one of the nation's leading law firms. He joined the firm in 1958, became managing partner in 1973 and assumed the chairmanship in 1983. Under his guidance, Bryan Cave expanded from a local law office to one that is international in stature, with more than 550 lawyers and operations throughout the United States and several countries.

"Together, Georgia and Bill have been a leading force in the drive for excellence at Washington University," said William H. Danforth, chairman of the Board of Trustees. "Both have been major contributors to their schools and to the University as a whole. Both are deeply involved in the University's Campaign for Washington University, as they were in our previous campaign. Washington University would not be where it is today without such wonderful friends."

Employment

Use the World Wide Web to obtain complete job descriptions. Go to cf6000.wustl.edu/hr/home (Hilltop) or medicine.wustl.edu/wumshr (Medical).

Hilltop Campus

Information regarding positions may be obtained in the Office of Human Resources, Room 130, West Campus. If you are not a WU staff member, call 935-9836. Staff members call 935-5906.

Circulation Assistant 990282

Computer Support Specialist 990283

Clinic Attorney 990289

Administrative Assistant 990292

Accounts Payable Representative 990296

Department Accountant 990302

Department Secretary 990303

Senior Personnel Specialist 990304

Assistant Director, Annual Giving 990306

Assistant Manager-Sponsored Projects 990308

Admissions Officer 990310

Assistant Director of Career Services 990312

Administrative Secretary 990315

Administrative Coordinator 990316

Correspondence Secretary (part time) 990317

Curator Modern Lit. Collection/Manuscript 990318

Assistant Dean for Undergraduate and Special Programs 990319

Administrative Secretary 990320

Lab Technician 990331

Faculty Assistant 990324

Input Output Clerk (part time) 990326

Genetics Research Technician 990328

Medical Campus

This is a partial list of positions at the School of Medicine. Employees: Contact the medical school's Office of Human Resources at

362-7196. External candidates: Submit resumes to the Office of Human Resources, 4480 Clayton Ave., Campus Box 8002, St. Louis, Mo. 63110, or call 362-7196.

Patient Accounts Supervisor 990543

Administrative Secretary 990831

Insurance Billing and Collections Assistant II 991271

Research Technician II 991434

Research Administrator 991436

Administrative Coordinator 991449

Driver 991471

Division Administrator 991514

Campus Watch

The following incidents were reported to University Police from May 25-June 6. Readers with information that could assist in investigating these incidents are urged to call 935-5555. This release is provided as a public service to promote safety awareness and is available on the University Police Website at rescomp.wustl.edu/~wupd.

Crime Alert

Two incidents of armed robbery occurred on campus in late May. In the first, a black youth, 12 to 16 years old, approached a female student in her car, displayed a handgun and demanded money. The student gave him her purse, which was later recovered with the cash missing.

In the second incident, two black youths, one 13 to 14 years old and the other 8 to 9, approached a female staff member in Lot #4, near Brookings Hall. The older youth demanded money and threatened the woman. The younger boy took her wallet from her purse, and the older took her

car keys. The youths ran north-east through the lot, with the victim in pursuit. Her wallet and keys were recovered east of the parking lot.

University Police urge all members of the campus community to be aware of activity around them and avoid unnecessary risks. Use emergency telephones when available. Lock doors at all times, and report suspicious persons and activities immediately to University Police at 935-5555 or, off campus, by dialing 911.

University Police also responded to one report of vandalism, one attempted forced entry, one bike theft and one stolen auto.

Notables

Cesaretti named a director of executive programs

George M. Cesaretti, who received an executive MBA degree from the School of Business in 1992, recently has been named a director of executive programs for the school. He directs continuing education programs that do not lead to a degree, including ones custom-designed for a company's specific needs, as well as open-enrollment courses.

He will report to the still-to-be-nailed associate dean and Vernon W. Piper Director of Executive Programs.

Cesaretti, who has 24 years of experience as an organization strategist and executive management consultant, directs custom programs in areas such as marketing, operations, finance and human resources. Since 1993, the school has served more than 1,200 executive students in custom programs designed for 15 companies, including Anheuser-Busch Cos., Charter Communications, Edward Jones, Maritz Inc., Monsanto Co. and SBC Communications Inc.

Cesaretti also will initiate open-enrollment courses on topics of interest, such as global supply chain management, that appeal to executives from many companies.

"We are very fortunate that such a talented, seasoned professional has chosen to come home to Olin to lead these programs," said Stuart I.



Cesaretti: Directs continuing ed programs

Greenbaum, Ph.D., dean of the business school. "George will greatly expand our capabilities in executive education, one of the most

crucial and fastest-growing areas in management education, taking full advantage, I'm sure, of the facilities offered by the Charles F. Knight Executive Education Center, now under construction."

Cesaretti, at Maritz Inc. for the past five years, most recently was vice president of market development, and previously

was director of market planning and executive consultant in change management. In these positions, he served as primary strategy consultant to the president and senior executive team of Maritz Performance Improvement Company, advised Maritz's chief operating office on organizational and business development issues, and provided executive-level consultation in organizational change and executive and staff development to Fortune 100 clients.

Previously, Cesaretti was senior management consultant and director of business development at McDonnell Douglas and, for 10 years, was a regular commissioned officer in the U.S. Army, serving in various command and staff positions worldwide. He also has served as adjunct faculty in marketing in University College.

In addition to the executive MBA degree received from the University, he earned a master of arts degree from the University of New Mexico in Albuquerque and a bachelor of arts degree from The Citadel in Charleston, S.C.

Holland-bound Cobey receives Fulbright

Patricia Cobey, playwright in residence in the Performing Arts Department and Department of English, both in Arts and Sciences, has received a Senior Scholar Fulbright grant to conduct research in the Netherlands during the fall semester. Cobey plans to study composition in 17th-century Dutch painting, as well as the structures of trade and business of that time. The research is in preparation for a future theatrical project.

Cobey will leave for the Netherlands in August and spend about four months working on the project. She will be affiliated with the University of Amsterdam, where she will lecture on contemporary American drama in the English Studies Department.

"I've always been interested in formal compositions, both in art and in societal structures," Cobey said. "Painting and commerce developed wonderfully in 17th-century Holland, and the question is what were the mutual influences and effects, the cross-overs and the exclusions."

"My interest is really what's

going on now," Cobey added. "This is just a way to approach it from a wider angle."

A native New Yorker, Cobey traces her interest in the Netherlands back to research she did on the founding of New Amsterdam. "It was a completely mercantile venture, as opposed to the colonies founded by the English," she explained. "That created a particular flavor for the island; Manhattan is different from the rest of the U.S., and it always has been, from the beginning."

Cobey spent the 1986-87 academic year in Ireland on a Fulbright fellowship that involved teaching at University College, Cork. During that visit Cobey also began a play, "The Girl From Claire," which later debuted in Washington University's A.E. Hotchner Studio Theatre and was featured on BBC Radio Four's Monday Afternoon Play series.

Cobey is one of about 2,000 who will travel abroad for the 1999-2000 academic year through the Fulbright Program, which is considered the nation's most prestigious fellowship for research abroad in the humanities and social sciences.

Obituaries

Robert A. Moses, professor emeritus of ophthalmology and visual sciences

Robert A. Moses, M.D., professor emeritus of ophthalmology and visual sciences at the School of Medicine, died after a long illness May 7, 1999, at Barnes-Jewish Extended Care Facility in Clayton. He was 82.

Moses came to Washington University in 1956 as an instructor in the Department of Ophthalmology and retired in 1987.

"He was a superior scientist who did important work on glaucoma," said Michael A. Kass, M.D., professor and interim head of ophthalmology and visual sciences. "Students from around the world came to work and learn from him. In spite of his excellent reputation, he was a quiet, unassuming man and a very public-minded person. The department will miss him very much."

For many years, Moses was the editor of Adler's Physiology of the Eye, an ophthalmology textbook that helped train thousands of eye doctors and scientists.

Moses was born in Baltimore and earned a bachelor's degree from Johns Hopkins University. He attended medical school at the

University of Maryland, did a rotating internship at Sinai Hospital in Baltimore and completed his surgical internship at a U.S. naval hospital in Norfolk, Va. Moses received advanced training under the auspices of the U.S. Public Health Service in Bern, Switzerland.

He also served in the U.S. Navy's 7th Beach Battalion during World War II.

He is survived by his wife of 58 years, Sylvia Moses; five sons, Bruce Greenfield, M.D., of Rockford, Ill.; Frederick Moses of Brookline, Mass.; Joel Moses of Richmond, Va.; Jonas Moses of St. Louis; and Thomas Moses of Baltimore; nine grandchildren; and three great-grandchildren.

A celebration of his life will be held at 2 p.m. Sunday, June 13 in Graham Chapel. In addition, the Robert A. Moses Research and Education Fund has been established in acknowledgement of his commitment to the education of ophthalmologists in areas that have been underserved. Contributions to the fund may be made in care of Professor J.M. Enoch, 54 Shuey Drive, Moraga, CA 94556.

Lillian Weger, longtime instructor in social work and medical schools

Lillian Balick Weger, a part-time lecturer and instructor in psychiatric social work since 1976 and a clinical social worker in private practice in St. Louis for nearly two decades, died May 20, 1999, at Barnes-Jewish Hospital. She was 65.

Weger joined the University in July 1976 as an instructor in psychiatric social work at the School of Medicine, an appointment she held until 1982. She served as chief of social work for the Child Guidance Clinic in the medical school's Division of Psychiatry from 1976 to 1986.

She began teaching as a part-time lecturer at the George Warren Brown School of Social Work in 1982 and had regularly taught one or two courses at the school every year since, including

the spring 1999 semester.

"She was an outstanding teacher and mentor and her students adored her," said Shanti K. Khinduka, Ph.D., dean of the social work school. "Over the years, she taught hundreds of GWB students who benefited from her deep clinical insights and practice experience."

Weger also taught clinical social work at several other St. Louis institutions. In 1986, she opened a private counseling practice in Clayton. She also was employed for more than 16 years as a clinical social worker and teacher with Care and Counseling Inc., a pastoral counseling agency in Creve Coeur.

Eric Weger, her late husband, was chairman of the University's chemical engineering department.

Arts and Sciences presents alumni awards

The School of Arts and Sciences recognized the achievements of its alumni and special friends May 14 in Holmes Lounge, Ridgley Hall.

Distinguished Alumni Awards were presented to four Arts and Sciences alumni who have attained distinction in their academic or professional careers and have demonstrated service to their communities and to the University.

The Dean's Medal was awarded to John F. McDonnell, newly elected chairman of the University's Board of Trustees, for his support and dedication to Arts and Sciences.

The four alumni honored are Gordon S. Black, A.B. '64; Charles A. Ingene, A.B. '69; Carolyn Werner Losos, A.B. '54; and Jacqueline Bickel Schapp, A.B. '47, M.S. '54.

A political science major in Arts and Sciences, **Black** is founder, chief executive officer and chairman of the board of directors of Harris Black International, based in Rochester, N.Y. This company includes the Gordon S. Black Corp., a premier supplier of market research and consulting services, founded in 1975.

Author or co-author of more than 20 articles in professional journals, he is the co-author of "The Politics of American Discontent" (1994), an analysis of the deterioration of American politics and government since 1960. His work on drug abuse, child abuse and quality of life has received national attention. In 1995, he received the state of New York's highest honor, the Governor's Excelsior Award.

An Arts and Sciences National Council member, Black is also a member of the University's William Greenleaf Eliot Society's Danforth Circle. He recently established the Robert Salisbury Prize in Political Science in Arts and Sciences.

Ingene, a professor of marketing at both the University of Washington in Seattle and the Chinese University of Hong Kong, is expert in channels of distribution, franchising, retailing, labor productivity, pricing and mathematical models. His current research involves mathematical models of distribution channels.

Ingene is regional editor of the

International Review of Retail, Distribution and Consumer Research and associate editor of the International Journal of Business. He is the co-author or co-editor of four books and has published 56 articles in refereed journals.

An economics major in Arts and Sciences at the University, he received his master's and doctoral degrees from Brown University. Ingene taught at the University of Oklahoma and the University of Texas at Dallas before joining the faculty of the University of Washington. He has won numerous prizes for his teaching and research.

A member of the William Greenleaf Eliot Society, he also is a Brookings Partner.

Losos, the retired program director of FOCUS St. Louis and retired executive director and program director of its parent organization, The Leadership Center of Greater St. Louis, is widely acknowledged to be responsible for the training of more than 1,000 of the region's leaders, including the mayor of St. Louis, the mayors of several St. Louis County municipalities, the heads of many of the region's nonprofit organizations and hundreds of business executives and other professionals.

In retirement Losos is playing a continuing role as consultant to the Carolyn W. Losos Regional Leadership Collaboration, a unique partnership of the region's colleges, universities and other leading institutions.

An education major in Arts and Sciences, Losos is a member of the Arts and Sciences National Council and served on the Arts and Sciences Task Force. She is an Arts and Sciences scholarship supporter, and she has been a Fellow of the William Greenleaf Eliot Society for more than 10 years.

Schapp, the first female athlete to be named to the University's Sports Hall of Fame, leads a life dedicated to the highest standards in athletics for herself and others. She has won dozens of awards — for her abilities as an athlete, coach and teacher and for her longtime volunteer work with educational, religious and civic groups.

An education and physical education major in Arts and

Sciences at the University, she captained the Bears' field hockey and basketball teams.

In 1947, she began her 41-year career teaching and coaching in the St. Louis area. Along with a 35-year career as an official in girls' and women's team sports, she worked hard to gain recognition of girls' sports and to increase officiating opportunities for women.

She is a charter member of the W Club executive committee and a member of the William Greenleaf Eliot Society. A champion volunteer for the University, Schapp is a \$1 million phonathon caller for Arts and Sciences.

Like his father and brother, **McDonnell** pursued a career in aerospace. In 1988 he became chairman of the board and chief executive officer of McDonnell Douglas. He continued to serve as chairman through the company's 1997 merger with The Boeing Co. and now serves on Boeing's board.

He also has been chairman of the Federal Reserve Bank of St. Louis since 1995 and a director of Ralston Purina Co. since 1988.

A leader in St. Louis, he also has been generous in sharing his leadership talent with the University. A member of the Board of Trustees since 1976, he was elected May 7 to succeed William H. Danforth as chairman. He assumes the post July 1. He has served two terms on the Board's executive committee and was named vice chair in 1995. He held various board leadership positions, including chair of the Trustee Steering Committee that evaluated and prepared a report on the Project 21 long-term plans of the University's schools and major units.

Appointed in 1986 as the founding chair of the Arts and Sciences National Council, he remains on the council as a member. McDonnell and his family have established four named professorships in Arts and Sciences. The family name is attached to McDonnell Hall and the McDonnell Center for the Space Sciences. In addition, a grant from the James S. McDonnell Foundation provided the seed money for the University's Philosophy-Neuroscience-Psychology Program in Arts and Sciences.

Washington People



Alison Goate, D. Phil., and Petra Nowotny, Ph.D., examine a "western blot" of presenilin protein, which is involved in familial Alzheimer's.

Breaking ground in Alzheimer's research

Alison Goate was first to discover genetic mutation behind dreaded disease

By JIM DRYDEN

Very few of us ever get to be first. Only one runner hits the tape, and only one team wins the Super Bowl, or, to make the metaphor more appropriate, the F.A. Cup, English soccer's most coveted prize. There are always other races and new champions, but that first one is special.

There's only one Manchester United, only one Roger Bannister and only one Alison Goate. She was the first scientist in her family, the first woman in her family to attend a university — and the first researcher to discover a genetic mutation that causes Alzheimer's disease (AD). Other researchers have identified a few other AD genes since, but she was, is and always will be the first.

Growing up in a small town near London, Alison Goate, D. Phil., developed an interest in science. Her father was an economist in the British Civil Service. Her mother took care of the house. An uncle who was an engineer was as close as the family got to science, but by high school she had decided on science as a career.

"I liked science, and I was good at it," she said. "My vacation jobs in the summer were related to science. My parents live around London, so it was reasonably easy to find research labs where I could work."

First, she was drawn to geology, "volcanoes and earthquakes, things like that," but later she gravitated towards biology, reasoning that there was greater career potential. She attended the University of Bristol, majoring in biochemistry, and later earned a doctorate at Oxford, investigating cellular changes that occur in liver cells during alcoholic liver disease. While at Oxford, one of the senior scientists in her lab introduced her to the discipline of human genetics, the field that eventually became her specialty.

In 1991, Goate, now a professor of psychiatry and genetics at the School of Medicine, was working in a laboratory at St. Mary's Hospital Medical School in London when she identified a mutation on chromosome 21 in a gene that encodes something called beta-amyloid precursor protein (APP). The β -amyloid protein is abundant in the plaques that characterize Alzheimer's disease. It is a product of APP metabolism, and Goate linked a mutation in the APP gene to a family with an inherited form of Alzheimer's disease.

"I was actually pregnant at the time with our first child," she recalled, "but I was working until about 9 o'clock every evening, and this was in central London, so it took another hour to get home. It was a very hectic time, but we were all very excited. We had a great team who really enjoyed working together."

A very special time

John Hardy, Ph.D., ran the lab. He recalls discussing the genetics of Alzheimer's disease endlessly and going through data over and over. Other investigators had ruled out chromosome 21 as the site for a mutation, but the lab at St. Mary's had DNA from a family in which affected members had the APP mutation. The hours were long, the work often confusing, but Hardy remembers his collaboration with Goate as a very special time.

"Alison is a great colleague. In all the 12 years we have worked together, I have never, ever had a cross word with her or from her," he said. "Not that she is a doormat. She says what she thinks and does what she says."

Goate sequenced the APP gene, and the mutation was discovered.

But they had DNA from only one affected family, so they began searching and screening new families. As it turned out, Goate had some DNA from a visit to the United States a few years earlier. The sample was from the lab of Allean Roses, M.D., the man who would later identify a linkage between the APOE-4 gene and Alzheimer's disease.

"It was in DNA from the family from Roses' lab that we found that same mutation," Goate said. "That

"You can have all of the skills, the teamwork and the insight," she said, "but none of the other AD genetics labs in the world at that time had the family that we had with the mutation. So, in some ways I was lucky ..."

confirmed this wasn't just a benign difference and that it was likely to be the cause of the disease."

Several weeks later, Goate, Hardy and their colleagues published their findings in the journal *Nature*, and everything changed.

"I remember going home and saying to my family that things would never be the same," Hardy recalled. "We knew how important the finding was immediately."

The discovery made the team from St. Mary's "hot" in the world of science, and not long after, they went their separate ways. Hardy went to the University of South Florida and now is at the Mayo Clinic in Jacksonville, Fla. Others headed to Australia, and Goate came to St. Louis.

"Living in London is hard on a scientist's salary, and my husband, Frank, is a scientist too," Goate said. "We decided we needed to leave, and we considered a number of opportunities, including going into industry, but we eventually decided that Washington University was the best fit."

Goate arrived in St. Louis in 1992, ready to contribute to the renowned Alzheimer's disease research team at the medical school. She was eager to work with John Morris, M.D., the Harvey A. and Dorismae Hacker Friedman Professor of Neurology; Leonard Berg, M.D., professor emeritus of neurology; and the other investigators at the Alzheimer's Disease Research Center (ADRC).

"Her presence at Washington University has been a major stimulus for research to under-

stand the genetic basis of Alzheimer's disease and related illnesses," Morris said. "She has established collaborations with ADRC investigators and with other Alzheimer's genetics researchers worldwide. Through these efforts and her own research, she has substantially raised the visibility of Washington University as a leader in this field."

Indeed, 12 years after first working with John Hardy, they continue to collaborate and have just received a \$2.34 million grant from the National Institutes of Health for their work on AD genetics.

But Washington University also has offered Goate the opportunity to expand into the genetics of psychiatric disease.

"There was a part of me that wondered whether we were on the verge of solving all of the questions regarding the genetics of Alzheimer's disease," she said, "and I thought that the genetics of diseases such as alcoholism would be a lot more complex and probably take a lot longer to resolve."

So, in addition to her work on Alzheimer's disease, Goate works with Theodore Reich, M.D., professor of psychiatry and genetics, analyzing DNA samples gathered for the National Institute on Alcohol Abuse and Alcoholism's Collaborative Study of the Genetics of Alcoholism.

Widely honored

Goate's 1991 discovery and her subsequent work in genetics have earned her several awards, including the Potamkin Prize for Alzheimer's disease research, the Zenith Award from the Alzheimer's Association, the Senior Investigator Award from the Metropolitan Life Foundation and the Innovation Award from the St. Louis Academy of Science.

The awards are a nice recognition, she acknowledged, but while she realizes how hard she has worked to learn about the genetics of Alzheimer's disease, there is a role for luck too, she said.

"You can have all of the skills, the teamwork and the insight," she said, "but none of the other AD genetics labs in the world at that time had the family that we had with the mutation. So, in some ways I was lucky, and I think that has given me a perspective on science that makes me realize how much luck is involved as well as skill."

At times, she laments her fate as a scientist and a woman. In some fields, a woman has the option of taking a career break to stay home when children are small. Goate doesn't believe that opportunity exists in science. Grants dry up. Colleagues in the lab get other jobs. So, when not sequencing genes, she spends as much time as possible with daughters Juliet (8) and Sasha (3). And just to make things really interesting, husband Frank Ashall has spent the last few years back in school — medical school — and is now a resident at Barnes-Jewish Hospital.

"I really admire him. I couldn't imagine going back and studying at this stage of my life and getting treated as medical students and interns are treated when I'm the age I am. I don't want to study for exams, and I need my sleep," she joked. "So I have tremendous respect and admiration for him and what he's done."

There is much she misses about England, lamenting a bit that her "kids are American in every way, including sounding American. I mean, they don't sound like my kids!" But she is committed to staying in the U.S. Besides, she noted wryly, "We can't go back. We have a medical school loan."

Alison Mary Goate, D. Phil.

Born St. Albans, Hertfordshire, United Kingdom

Education University of Bristol, B.Sc., biochemistry, 1980; Linacre College, University of Oxford, D. Phil. from the Faculty of Clinical Medicine, Nuffield Department of Pathology, 1983

University position professor of genetics in psychiatry and professor of genetics

Family Husband, Frank Ashall, D. Phil., M.D.; Juliet, 8; Sasha, 3

Other Interests Museums, national parks and history

Goals A treatment for Alzheimer's disease



Alison Goate, right, enjoys a meal with her family. They are (from left), Frank Ashall, her husband; Peter Goate, her father; her daughter, Sasha; her mother, Grace Goate, and her older daughter, Juliet.