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Institutions share Pew science grant

Washington University and 12 other mid-country universities and colleges will share a \$1.7 million grant from the Pew Charitable Trusts, Philadelphia, to enhance undergraduate science education and attract and retain students and faculty in the sciences.

The grant, a renewal of a grant awarded three years ago to the institutions, is part of a national effort by Pew Charitable Trusts to improve undergraduate science and mathematics education. The participating colleges and universities are members of the Midstates Science and Mathematics Consortium. Under terms of the grant, they will collaborate for three years through workshops, faculty and student exchanges, undergraduate research symposia, and summer research awards for faculty and undergraduates, among other activities.

Washington University and the University of Chicago are the two research universities working with the consortium. Participating colleges (in alphabetical order) are Beloit College (Wis.), Carleton College (Minn.), Grinnell College (Iowa), Hope College (Mich.), Kalamazoo College (Mich.), Knox College (Ill.), Macalester College (Minn.), Rhodes College (Tenn.), St. Olaf College (Minn.), and Trinity University (Texas). Macalester College in St. Paul, Minn., will coordinate the program, with assistance from an executive committee comprising a representative from each institution. John R. Bleeke, Ph.D., associate professor of chemistry, is the Washington University faculty representative.

"America's continued leadership in science depends on the steady supply of trained scientific minds flowing from the nation's undergraduate and graduate institutions," said Joan S. Girgus, Ph.D., director of the Pew Science Program and professor of psychology at Princeton University. "We are expecting enormous shortages of scientists and engineers by the year 2010. Recent studies show that less than half the students who enter college intending to major in science and math actually end up doing so. Clearly, improved undergraduate science programs can play a vital role in solving this crisis."

According to Chancellor William H. Danforth, the institutions in the consortium have a history of prior collaborations and have developed impressive records of sending their students on to advanced graduate programs in science and mathematics.

"Collaboration and cooperation between faculty, students and institutions have been strong aspects of this partnership, and part of the reason our efforts have been successful," he said. "We are all very pleased that the Pew Charitable Trusts are providing us with another valuable cycle of exchanges and programs."

As an example of how the consortium works, Washington hosted science and mathematics symposia under the direction of David L. Kirk, Ph.D., professor of biology, in the fall of 1989, and in the fall of 1990 under Bleeke's direction. The undergraduate students gave presentations and poster talks about the research they had conducted as part of consortium activities. Some of the research was published in refereed journals. Similar programs are hosted by the other consortium institutions.

The Pew Charitable Trusts, a national philanthropy, support non-profit organizations dedicated to improving the quality of life for individuals and communities and encouraging personal growth and self-sufficiency.



Stanley Finger, Ph.D., professor of psychology, has spent the last three years researching the early roots of the neurological sciences for a two-volume book he is writing. Finger's forthcoming book includes this copperplate by Guilo Casserio (1561-1616), which depicts an early representation of the brain.

A cerebral pursuit Tracking the neurological sciences through history

The blade is long, curved and sharp, ideal for its intended purpose of delicately removing a circle of bone at the top of the skull, permitting surgeons to expose the living brain beneath. A gleaming steel device found in a modern operating room? Not this tool. Made of bronze, this surgical implement called a tumi may be several thousand years old. It comes from ancient Peru, where in some regions an astounding 21 percent of the skulls show evidence of craniotomies.

In an age when radiologists embark on survey expeditions to map the twisting canyons of the brain, when computer cowboys herd synthetic neural networks into patterns that mimic the mind, and when MENSA members choose mates based on whether their genius springs from the right brain or the left, Stanley Finger, Ph.D., professor of psychology, decided it was time to pause and take a look back.

"We have very little perspective on the roots of the brain sciences," says Finger. "People have no idea that some of the same issues that scientists are discussing today about the brain and its functions were discussed in very similar terms in earlier times."

Finger, who wrote or edited five books about recovery from brain damage, has spent the last three years researching the early roots of the neurological sciences. His two-volume book, "Neurohistory: Perspectives on Brain and Behavior," will be published by the Oxford Press in 1993. He reported some of his observations at the recent Conference on Brain History, held in Fort Meyers, Fla. The timing could not be more appropriate: the United States Congress has declared the 1990s the "Decade of the Brain."

The brain drain

"Brain damage is as old as man," says Finger. He cites a three million-year-old Australopithecus skull that is scarred by fractures, their placement suggesting that the early hominid was clubbed to death from behind.

But it is not until around 10,000 years ago that we see the appearance of many skulls in which deliberate holes have been made. Hundreds of such Stone Age surgeries have been

documented. "The prehistoric practice of opening the skull would imply organized societies that had definite beliefs about the brain and behavior," says Finger. Many of the skulls exhibit new bone growth around the wound, indicating that this primitive neurosurgery was not done after death or as a sacrificial rite. "The survival rate, especially in New World sites, is really quite staggering. The intent definitely was to have the person live afterward."

Theories about the purposes behind these early procedures abound. Some anthropologists believe they were part of religious rituals. Others say they were performed to allow evil spirits and demons to escape. "This is how prehistoric physicians may have approached and treated headaches and mental disorders," says Finger.

By the time of the ancient Greeks, trepanation — the act of drilling or scraping holes in the skull — was definitely being performed for medical purposes. "They did this to let bad humors out," Finger says, "but only for closed head injuries, not ones that exposed the brain. If the skull were badly bashed, the accumulated humors that affected behavior automatically had a way to escape." Ironically, these procedures may actually have relieved the dangerous build-up of pressure caused by swelling in the brains of people with closed head injuries.

The Egyptian prescription

The ancient Egyptians produced the earliest known written document describing the effects of brain injuries. Known as the Edwin Smith Surgical Papyrus (named for the man who bought it in 1862), the scroll appears to be a medical student's lecture notes. The document includes the 4,500-year-old descriptions of some 48 different clinical cases, giving the history, examination, diagnosis, prognosis and treatment for each.

"Considerable space was devoted to wounds of the head and spinal cord. Most of these seemed due to injuries sustained in combat," says Finger. "The doctors using this information were like MASH units for the ancient Egyptian military. They had to decide on the spot to treat, or not to treat, each case.

This often depended on how many cases they had at a given time."

He adds, "ancient Egyptian physicians were aware of the fact that symptoms of central nervous system injuries could occur far away from the locus of the damage. There are written examples of head injuries causing problems in eye-hand coordination, and recognition of the fact that deficits usually occurred on the side of the body contralateral to the head injury."

But it would not be until many centuries later that scientists began to realize that the brain has two functionally distinct hemispheres and that different parts of the brain are responsible for specific motor and sensory functions. The evolution of this key discovery is one of the most intriguing subjects Finger has found in his research, and is almost as convoluted as the folds of the brain itself.

Emanuel Swedenborg was among the first to postulate that brain function was localized. Better known for his later theological work, in 1734 Swedenborg began a series of treatises in which he predicted many later discoveries, among them the notions that the cortex was divided into territories he called "cerebellula," and that different areas of the cerebral cortex control different parts of the body.

"Unfortunately, his work was not circulated in his lifetime," Finger notes. "These premonitions of what would later be demonstrated experimentally had little or no impact on his scientific contemporaries or on the history of localization."

Around 1800, anatomist Francis Gall proposed that there were "independent faculties of the mind," which might or might not flourish in a given individual. "He was the first to suggest publicly that the cerebral cortex could be divided into different units," says Finger. But Gall was better known for the pseudoscience of phrenology — the notion that mental functions resided in different parts of the cerebrum and that talents correlated with bumps and bulges on specific parts of the skull — and few in the serious scientific community accepted his theory.

The first scientist to document

Continued on p. 2



An ancient bronze Peruvian tumi, which was used to remove a circle of bone on the top of the skull.

Cerebral pursuit — continued from p. 1

localization of cerebral function was Jean-Baptiste Bouillaud. He had collected hundreds of cases of speech loss by 1825, when he wrote the following: "It is evident that the movements of the organs of speech must have a special centre in the brain.... From the observations I have collected, and from the large number I have read in the literature, I believe I am justified in advancing the view that the principal lawgiver of speech is to be found in the anterior lobes of the brain."

Unfortunately, no one listened.

"Although Bouillaud was now providing clinical-pathological correlations, because he had received some of his training with Gall, his message either was ignored or challenged," Finger says. "Some disbelievers pointed to the many patients with cortex damage who did not lose speech. They had no idea at this time of the difference between the left and right hemispheres of the brain."

"The concept of cerebral dominance should have been discovered hundreds of years before it was," Finger says. "There were many cases of people who lost speech and had right-side paralysis. Even the Greeks knew that the right side of the body was controlled by the left side of the brain. All the data were right in front of them. Why someone didn't make the connection between speech and the left side of the brain earlier is one of the great mysteries."

French physician Marc Dax almost made the history books when he wrote a paper in 1836 describing 40 cases with lesions in the left hemisphere of the brain, speech loss and right-side paralysis. For some reason he did not present the paper, and in 1861 neurosurgeon Paul Broca would get credit for discovering the center for speech. It was to be the first widely accepted localization of a function in a discrete part of the cortex. That region of the brain is now known as Broca's area.

It also was Broca, not Dax, who got the credit for determining that there are two functionally distinct sides of the

brain. "By 1863, Broca realized that all of his cases of speech loss had damage on the left side of the brain. In 1865 he wrote a major paper on this. The evidence was so overwhelming for cerebral dominance that the whole scientific community was won over," Finger says.

This revelation had an immediate impact, as medical detectives rushed to identify which of the brain's little grey cells controlled what functions. And medicine was forever changed as neurosurgeons soon began to pinpoint the probable locations of brain tumors based solely on patients' symptoms.

There also began a flurry of speculation and theory about the two sides of the brain that has not abated to this day. "People began to think of the left hemisphere — where speech is localized — as the intelligent hemisphere, and the right as something more savage, more primitive," notes Finger.

The new science may have influenced some writers, especially Robert Louis Stevenson. His *Strange Case of Dr. Jekyll and Mr. Hyde* was written in 1886, when these theories were being debated.

The notion that the less intelligent right hemisphere could be trained to be more human took hold soon after. "Schools started teaching kids to do two things at the same time, with one hand playing the piano and the other writing," Finger says. "Ambidextrous societies were springing up all over the world until it was suggested that this led to even more problems, such as stuttering."

Today, the notion that "left-brained" people are more logical and "right-brained" people more creative is accepted as fact among much of the public. And it is because of such oversimplifications that Finger believes we should heed the lessons of history.

"Understanding the history of brain science will help us to put things into perspective. It will help us to understand how we got here, and where we might go in the future," says Finger.

— Fran Hooker

Foremost performers of classical Indian music to present concerts

The classical music of India is different in every imaginable way from classical music known to Westerners. Originating centuries ago as devotional offerings presented in the temple to satisfy the gods, traditional musical renditions would last for hours at a time. As the performers warmed to their task, the intricacy and the emotional intensity of the performance would increase to frenetic levels, carrying musicians and listeners alike into a state of ecstasy.

Today, neither performers nor audiences have the stamina for such extended rapture as a general thing, but interest in studying and preserving the classical forms of Indian music has increased among both those native to the culture and Western scholars as well.

Two ensembles featuring the foremost performers of India's traditional music will present concerts at 3 p.m. April 7 and 14. The programs, co-sponsored by the Department of Music and Sangeetha, a local organization devoted to classical Indian music, will focus on two sharply different styles. The first, to be held at the Ethical Society of St. Louis, 9001 Clayton Road, will feature Karnatic music of southern India with Sri Nedunuri Krishna Murthy, vocalist; Umayalpuram Shri K. Sivaraman, percussionist, playing the mridangam; and Thirupparkadal S. Veeraraghavan, violinist.

The second concert, on April 14 in Holmes Lounge, Ridgley Hall, will highlight northern India's Hindustani music for sarod, played by Rajeev Taranath, and tabla, played by Shyam Kane.

The two styles of Indian classical

music differ primarily in the degree of their variance from ancient forms: the Karnatic music of the south holds more rigidly to tradition, while the northern Hindustani music has undergone dynamic changes through greater exposure to foreign cultures. Both make use of the literature of ragas, melodic forms based on the Indian system of 72 scales.

Hundreds of ragas exist, each with its own character, according to Mike Sateesha of Sangeetha. Conceived as religious pieces, many ragas are associated with certain seasons, special occasions, hours of the day, or emotional characteristics such as pathos or heroism. "Musicians experience adventure and excitement as they create and improvise on the ragas, within set limits and fundamental rules," explains Sateesha.

Indian vocal technique is almost instrumental in nature, and Nedunuri has been lauded in the Indian press for his "delicate and nimble voice to serve the requirements of valuable classicism." The mridangam, a two-headed drum, and the violin, made like a Western instrument but tuned differently and played by a musician seated on the floor holding it between his foot and his chest, both follow and improvise on the vocalist's melody. The sarod is a long, narrow instrument of teak with 25 strings.

Tickets for each concert are \$15 for the general public; \$8 for students and senior citizens; and free for Washington University faculty, staff and students. For more information, call 889-5581.

Food festival to help homeless

Savor St. Louis, a fund-raising food festival featuring the specialties of eight local restaurants, will be held from 11 a.m. to 4 p.m. April 9 on the Washington University law field. The event, sponsored by Chimes, a junior honorary society at the University, is open to the public.

Health Care for the Homeless, an organization that works with emergency shelters and hospitals to help provide health services for the homeless, will receive 25 percent of the festival's proceeds. Last year Chimes raised approximately \$1,000 for the

Progressive Youth Center, a crisis intervention center for local teenagers.

The restaurants that will participate in the event are: Amighetti's, Baskin-Robbins, Candicci's, Lindell Terrace Cafe (formerly Empanada's), Manhattan Cafe, Olympia Kebob House, the Red Sea (Ethiopian food), and Subway.

The festival activities also will include an ice cream-eating contest at 2 p.m. sponsored by Baskin-Robbins and a raffle for gift certificates to other restaurants.

For more information, call 862-3882.

Feminist view to be given in ethics talk

Author Margaret Farley will give the final talk in the lecture series "Moral Absolutism/Moral Relativism: By What Criteria Shall We Act?" at 7:30 p.m. April 8 in Room 110 January Hall.

Her talk, "How Relative Can Christian Ethics Be: A Feminist Perspective," is free and open to the public.

Author of *Personal Commitments: Beginning, Keeping and Changing*, and co-author of *A Metaphysics of Being and God*, Farley is the Gilbert L. Stark Professor of Christian Ethics at the Divinity School of Yale University.

Farley is active with the Bioethics Committee of the Yale-New Haven

Hospital; the Ethics Committee of the American College of Obstetricians and Gynecologists; and the Hastings Center, Institute of Society, Ethics and Life Sciences.

Farley, who holds a doctorate from Yale, received both a Danforth Teacher Grant and a Kent Fellowship from the Society for Values in Higher Education.

The series is sponsored by the Assembly Series, Religious Studies Program, the senior class of 1991, the Council on Inter-Religious Concerns and the Committee on Religious Studies.

For information, call 889-5115.

Roadside America is topic of lecture

John Margolies, New York photographer and writer, will give an illustrated lecture titled "The End of the Road" at 8 p.m. April 8 in Steinberg Hall auditorium.

The lecture, free and open to the public, is sponsored by the School of Architecture and Assembly Series, with additional support from Student Union.

Margolies will discuss the roadside buildings such as gas stations, motels, and eating and drinking establishments that evolved to serve automotive America. Focusing on their significance in architecture and design, he will illustrate his lecture with examples from throughout North America.

For information, call 889-6200.

NOTABLES

Wendy Auslander, Ph.D., assistant professor in the School of Social Work, published "Assessing Family Sharing of Diabetes Responsibilities" in the *Journal of Pediatric Psychology*, Vol. 15, No. 4, with B. Anderson, K. Jung, J.P. Miller and J.V. Santiago.

Kenneth Chilton, associate director of the Center for the Study of American Business, was a participant at the Institute for Resource Management's conference on integrated solid waste management, held in Sundance, Utah.

David Felix, Ph.D., professor emeritus of economics, presented a paper titled "Observations on Privatization in Latin America" at a symposium at Michigan State University. The symposium theme was "Toward the Next Century: Global Restructuring of Public and Private Life."

William Daniel File, artist-in-residence and scenic designer for performing arts, attended the United States Institute of Theatre Technology's international conference in Boston. He chaired a panel titled "Grant Writing Proposals, Scholarships: Who, What, Where, How" and was a member of a panel titled "Interactive Teaching Methods in Theatre Education."

Christopher Gilbert, Ph.D., visiting assistant professor in political science, won the Pi Sigma Alpha award of the Western Political Science Association for the best paper at the 1990 Western Convention. The paper, titled "Religion, Neighborhood Environments, and Partisan Behavior," encompasses theology, sociology and political science, all in one work.

Lynn Stockman Imergoot, assistant athletic director, has been asked to serve as a member of the District 7 selection committee for the Administrator of the Year Award sponsored by the Council of Collegiate Women Athletic Administrators.

Udo Kultermann, Ph.D., Ruth and Norman Moore Professor of Architecture, presented a lecture titled "The Myth of Pygmalion and the Meaning of Art" at the Courtauld Institute of the University of London.

Mellon Foundation awards grant for arts and sciences

The Andrew W. Mellon Foundation of New York City has awarded Washington University a \$240,000 grant for further development of programs in the arts and sciences, Chancellor William H. Danforth has announced.

According to Danforth, the grant will be used principally for graduate programs in the Department of Romance Languages and Literatures and the Department of History, covering activities over a three-year period.

Danforth said that parts of the grant will be used for the salary of a new faculty position and for support of graduate students traveling to off-campus sites for dissertation research and for general support during the final two years of their graduate studies.

Danforth said the University is extremely grateful to the Mellon Foundation for its continued support in the humanities, "which are central to the arts and sciences. I know I speak in behalf of the entire University in expressing our appreciation for their generosity," Danforth said.

Norris J. Lacy, Ph.D., professor of French, has been elected president of the North American Branch of the International Arthurian Society. He will hold the office until 1994. He is also the honorary international president of the society, having served as international president from 1984-87. The Arthurian Society is a scholarly organization with some 2,000 members in 16 countries; the North American Branch has about 500 members.

John A. McDonald, M.D., Ph.D., professor of internal medicine and director of the Respiratory and Critical Care Division at the School of Medicine, and **Dwight C. Look**, M.D., a fellow in the Respiratory and Critical Care Division, attended the Dana Point Pulmonary Fellows Symposium held in Dana Point, Calif. McDonald presented an update on pulmonary fibrosis.

Charles F. Quest, professor emeritus in the School of Fine Arts, has sold 21 of his woodcuts and engravings to Georgetown University in Washington, D.C., for the school's permanent collection. The new purchases will be added to Quest's other works bought by the university, which total 198 prints, etchings, lithographs, collages, woodcuts and copper engravings. He was the subject of an article published in the Tryon (N.C.) Daily News Bulletin and in the Polk County (N.C.) News Journal.

Daniel Shea, Ph.D., professor of English, is one of five editors of *Journeys in New Worlds: Early American Women's Narratives*, which has been published by the University of Wisconsin Press.

Have you done something noteworthy?

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

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Editor: Susan Killenberg, 889-5254, Campus Box 1070; P72245SS at WUVMC
Assistant editors: Deborah Parker, 889-5235, Campus Box 1070; P72245DP at WUVMC; Carolyn Sanford, 889-5293, Campus Box 1070; P72245CS at WUVMC

Editor, Medical Record: Joni Westerhouse, 362-8257, Medical School Campus Box 8065; C72245JW at WUVMC

Contributing writers: Debra Bernardo, Joyce Bono, Kleila Carlson, Gerry Everding, Tony Fitzpatrick, Fran Hooker and Virginia Perkins
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Academy of Sciences recognizes Walker's pioneering space research

Robert M. Walker, Ph.D., director of the McDonnell Center for the Space Sciences at Washington University, has received the J. Lawrence Smith Medal from the National Academy of Sciences. The award, which carries a bronze medal and a prize of \$20,000, was given in recognition of Walker's "pioneering research and numerous innovative techniques using solid state physics in the study of meteorites and interplanetary dust particles." The award is given every three years for "investigations of meteoritic bodies," according to the national academy.

Walker, McDonnell Professor of physics, has been working on the frontiers of space research for more than three decades. In his early career he was involved with the first Apollo missions to the moon as a principal investigator and also as a member of the scientific team that advised NASA on the handling and distribution of moon rock and soil samples.

He is known for his pioneering investigations on radiation effects in metals and as co-discoverer of a technique to detect tracks left in crystals by the passage of nuclear particles. This discovery led to the development of the fission-track dating method, which has been used in dating various Earth materials as well as meteorites. Etched track detectors also have contributed to a variety of other scientific advances, including the discovery of extremely heavy cosmic rays, measurement of the time variation of solar and galactic radiations, and the existence of now-extinct radioisotopes in the early solar system.

Walker oversees one of the world's largest research groups involved in the search for and study of extraterrestrial materials. Using a variety of highly

specialized techniques, the laboratory is contributing fundamental knowledge about the early history of the solar system and the events that preceded its formation. Major projects include the analysis of extraterrestrial dust particles collected in the upper atmosphere and the identification of preserved interstellar dust in primitive meteorites.

As part of his continuing interest in the study of meteorites, Walker was a member of the 1984-85 and 1990-91 expeditions to collect meteorites in Antarctica. He also serves as chairman of the NSF-NASA Meteorite Working Group, which gives advice on the collection and distribution of Antarctic meteorite samples.

Walker was a co-investigator on an experiment that flew on the recently recovered LDEF satellite and is principal investigator on a project selected to fly on the proposed space station, Freedom. He was a co-founder and the first president of Volunteers for International Technical Assistance, an association of more than 7,000 scientists and engineers who use their skills to help developing nations solve technical problems.

Walker is a fellow of the American Physical Society, the Meteoritical Society, the American Geophysical Union and the American Association for the Advancement of Science. Among his many other awards are the E.O. Lawrence Award of the Atomic Energy Commission, American Nuclear Society Annual Award and a NASA Exceptional Achievement Award.

He was elected to the National Academy of Sciences in 1973 and also is the recipient of honorary degrees from his alma mater, Union College in Schenectady, N.Y., and from the Universite de Clermont-Ferrand, France.

Bowen is named chair of social thought and analysis committee

John R. Bowen, Ph.D., assistant professor of anthropology, has been appointed chair of the University's Committee on Social Thought and Analysis, according to Martin H. Israel, Ph.D., dean of the Faculty of Arts and Sciences.

A sociocultural anthropologist, Bowen has been a member of the University's anthropology faculty for six years. He is an active member of Washington's Task Group on Social Thought and Analysis, which was established to ensure that social thought and analysis are covered in the University's curriculum after the sociology department is closed.

The group recommended the

creation of the Committee on Social Thought and Analysis to supervise an interdisciplinary curriculum that will draw on faculty from various departments in the social sciences. The recommendation was endorsed by the Faculty of Arts and Sciences earlier this year. "I am confident that John Bowen will provide the vigorous leadership that will be needed to establish curricula such as those described in the task group report," said Israel.

Bowen received a bachelor's degree from Stanford University in 1973, and a master's degree and doctorate in anthropology from the University of Chicago in 1977 and 1984, respectively.

NEWSMAKERS

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

Stomach upset, irregular heart rates and poor urinary function are ailments that commonly afflict the elderly. Robert E. Schmidt, M.D., Ph.D., professor of pathology, and Kevin A. Roth, M.D., Ph.D., assistant professor of pathology, may have discovered why. They believe, according to articles in recent issues of *Insight*, *Philadelphia Inquirer*, *American Family Physician* and *Omaha*

World, that a buildup of lesions in nerve cells of the autonomic nervous system are to blame.

"The Immigration and Naturalization Service (INS) is a massive, sprawling bureaucracy that no human being could single-handedly overhaul in a year," says Stephen H. Legomsky, J.D., professor of law, in a letter to the attorney general that appeared in a recent issue of the *Washington Post*. Legomsky believes that Gene McNary, director of the INS, deserves credit for the rapid progress of the past year despite criticism from William P. Ccok at the Department of Justice.

CALENDAR

April 4-13

LECTURES

Thursday, April 4

Noon. Dept. of Genetics Seminar, "Analysis of Tfid and Other Transcription Factors of Yeast," Fred Winston, Dept. of Genetics, Harvard Medical School. Room 816 McDonnell Medical Sciences Bldg.

1:10 p.m. George Warren Brown School of Social Work Lecture Series, "Dynamics of Homelessness: Recent Findings and Implications," Irving Piliavin, director and prof., School of Social Work, U. of Wis.-Madison. Brown Hall Lounge, Room 218. For info., call 889-6606.

2:30 p.m. Dept. of Mechanical Engineering Seminar, "Experimental Investigation of Large-scale Structures in Compressible Mixing Layers," Nathan Messersmith, doctoral candidate, U. of Ill.-Urbana. Room 100 Cupples II. For more info., call 889-6047.

2:45 p.m. Dept. of Physics Special Condensed Matter Seminar, "NMR Study of HD in Rare Gas Solids, Zeolite, and Vycor Glass," Jonghun Lyou, graduate student, WU Dept. of Physics. Room 241 Compton Hall.

4 p.m. Asian Studies Colloquium, "Women's Entrepreneurship and the Changing Opportunities in Japanese Business," Barbara Darlington Ito, prof. of anthropology and East Asian studies, Rose-Hulman Institute of Technology. Room 30 January Hall. For info., call 726-4448.

4 p.m. Dept. of Chemistry 23rd Joseph W. Kennedy Memorial Lecture, "Surprises in One of Nature's Smallest Rotating Systems," Frank Stephens, Lawrence Berkeley Lab. Room 458 Louderman Hall. (Refreshments: 3:30 p.m., Millstone Lounge.)

4 p.m. Dept. of Pathology Seminar, "Acute Phase Complement Gene Expression," Harvey Colton, Harriet B. Spoehrer Professor and head of the WU Dept. of Pediatrics. Third Floor Aud., Children's Hospital, 400 S. Kingshighway Blvd.

4 p.m. Dept. of Anthropology Colloquium, "Yemen and the Aftermath of the Conflict in the Persian Gulf," Manfred Wenner, prof., Northern Ill. U. and the American Institute of Yemeni Studies. Room 101 Old McMillan Hall.

4:15 p.m. Dept. of Philosophy Lecture, "Is There a Problem About Realism?" John Searle, prof., Dept. of Philosophy, U. of Calif.-Berkeley. Steinberg Hall Aud.

8 p.m. Gallery of Art Tactics of Posture Lecture Series, "States of Being," Jana Sterbak, Canadian photographer and sculptor. Steinberg Hall Aud. For more info., call 889-4523.

Friday, April 5

11 a.m. Dept. of Chemistry Seminar, "Superdeformed Nuclei," Frank Stephens, Lawrence Berkeley Lab. Room 311 McMillen. (Coffee: 3:45 p.m.) For info., call 889-6530.

Noon. Dept. of Cell Biology and Physiology Seminar, "Specialized Function of Vacuolar H⁺-ATPase in Proton-transporting Cells," Steven Gluck, WU Depts. of Internal Medicine and Cell Biology and Physiology. Room 423 McDonnell Medical Sciences Bldg.

Noon. Dept. of Physics Brown Bag Lunch Seminar, "Gamma Ray Astronomy at Energies >0.3 TeV," W. Robert Binns, research prof., WU Dept. of Physics. Room 241 Compton Hall.

4 p.m. Dept. of Neurology and Neurological Surgery 36th George H. Bishop Lecture in Experimental Neurology, "Brain Systems and the Structure of Memory," Larry R. Squire, Dept. of Psychiatry, U. of Calif.-San Diego. Moore Aud., 660 S. Euclid Ave.

4 p.m. Division of Hematology/Oncology Seminar, "Molecular Determinants of Extracellular Matrix Assembly," Bjorn Olsen, Dept. of Anatomy and Cell Biology, Harvard Medical School. 8841 Clinical Sciences Research Bldg.

6 and 8:30 p.m. WU Association Travel Lecture Series, "The Great Alaska Cruise," Doug Jones, film lecturer. Graham Chapel. For ticket info., call 889-5212.

Saturday, April 6

9 a.m. Saturday Morning Neural Science Seminar Series: The Neurobiology of Alzheimer's Disease Presents "Tangles, Plaques and Amyloid: Signposts of Pathogenesis in Alzheimer Dementia of Misleading Epiphenomena?" Melvyn J. Ball, Division of Neuropathology, Oregon Health Sciences U. Erlanger Aud., McDonnell Sciences Bldg.

Monday, April 8

4 p.m. Immunology Program Seminar, "T Cell Recognition of MHC/Peptide Complexes," Pamela J. Bjorkman, asst. prof., Division of Biology, HHMI, California Institute of Technology. Third Floor Aud., Children's Hospital, 400 S. Kingshighway Blvd.

4 p.m. Dept. of Biology Seminar, "Cell-cell Communication in Yeast," Leland Hartwell, Dept. of Genetics, U. of Wash.-Seattle. Room 322 Rebstock Hall.

7:30 p.m. Assembly Series Presents Moral Absolutism/Moral Relativism Lecture, "How

Relative Can Christian Ethics Be: A Feminist Perspective," Margaret Farley, prof. of Christian ethics, Yale Divinity School. Room 110 January Hall. For more information about the Assembly Series lectures, call 889-4620.

8 p.m. School of Architecture Monday Night Lecture Series, "The End of the Road," John Margolies, photographer. Steinberg Hall Aud. For more info., call 889-6200.

Tuesday, April 9

4 p.m. Assembly Series Presents Lewin Lecture, "The Social Individual is Man and Woman," Joan Wallach Scott, prof. of social science, Institute for Advanced Studies, Princeton University. Hurst Lounge, 201 Duncker Hall.

4 p.m. Dept. of Cell Biology and Physiology Second Joseph Erlanger Lecture, "Traffic Control Between the Endoplasmic Reticulum and the Golgi Complex in Eukaryotic Cells," George E. Palade, dean for scientific affairs, U. of Calif.-San Diego School of Medicine. Moore Aud., 660 S. Euclid Ave.

Wednesday, April 10

11 a.m. Assembly Series Lecture, "The Rediscovery of Shakespeare's Globe," Patrick Spottiswoode, director of education, the International Shakespeare Globe Centre in London. Edison Theatre.

4 p.m. Dept. of Physics Colloquium, "Cooling Atoms to Micro-Kelvin Temperatures," Harold Metcalf, State U. of New York at Stony Brook. Room 204 Crow Hall.

4 p.m. Dept. of Biochemistry and Molecular Biophysics Seminar, "Protein Interaction Folding and Function by Hydrogen Exchange and 2D NMR," S. Walter Englander, Dept. of Biochemistry and Biophysics, U. of Pa.-Philadelphia. Erlanger Aud., McDonnell Medical Sciences Bldg.

8 p.m. Dept. of English Presents Readings From the Writing Program. Hurst Lounge, 201 Duncker Hall. For more info., call 889-5187.

Thursday, April 11

4 p.m. Dept. of Biology Seminar, "Patterns and Processes of Evolutionary Diversification in the World's Most Variable Mammal," James Patton, curator and prof., Museum of Vertebrate Zoology, U. of Calif.-Berkeley. 322 Rebstock.

4:15 p.m. Dept. of Philosophy Colloquium, "Undoing Ataraxia: Pascal's Christianization of Pyrrhonism," Jose R. Maia Neto, WU graduate student. Women's Bldg. Lounge.

6:15 p.m. Dept. of Germanic Languages and Literatures Presents "Reading From Her Works," Ursula Krechel, Max Kade Writer-in-Residence. Room 349 McMillan.

Friday, April 12

9:15 a.m. Dept. of Pediatrics Fourth Ben Abelson Memorial Lecture, "Souping Up the Cell Motor," Thomas P. Stossel, prof. of medicine, Harvard Medical School. Clopton Aud., 4950 Audubon Ave.

Noon. Dept. of Surgery Transplant Conference "Vascular Endothelia and T Lymphocytes as Co-conspirators in the Destruction of Experimental Allografts," Charles G. Orosz, director, Therapeutic Immunology Laboratories, Ohio State U. Third Floor Aud., Clinical Sciences Research Bldg.

1:10 p.m. George Warren Brown School of Social Work Colloquia, "Political Structure, Economic Growth, and Social Development: The Experience of the Four Little Dragons," Peter C.Y. Lee, prof., School of Social Work, San Jose State U. Brown Hall Lounge, Room 218.

4 p.m. Dept. of Biology Seminar, "Streptococcal M. Protein: A Common Structural Motif for Surface Protein of Gram-Positive Organisms," Vincent A. Fischetti, Rockefeller U., New York. Room 322 Rebstock Hall.

PERFORMANCES

Friday, April 5

8 p.m. Performing Arts Dept. Presents Shakespeare's "Othello." (Also April 6, 12 and 13 at 8 p.m., and April 7 and 14 at 2 p.m.) Edison Theatre. Cost: \$7 for general public; \$5 for senior citizens, students and WU faculty and staff. For ticket info., call 889-6543.

MUSIC

Thursday, April 4

8 p.m. WU's Visions Gospel Choir Second Anniversary Concert. Held in conjunction with the Martin Luther King Symposium. Graham Chapel. Free. For info., call 862-4409.

Saturday, April 6

8 p.m. Dept. of Music Presents a Soprano Voice Recital with WU students Laquita Graham and Jennifer Rusnak. McMillan Hall cafeteria. Free. For more info., call 889-5581.

Sunday, April 7

3 p.m. Dept. of Music Presents a Graduate Voice Recital with soprano Christine Renee Descher. First Congregational Church of St. Louis, 6501 Wydown Blvd. Free. For more info., call 889-5581.

Monday, April 8

8 p.m. Dept. of Music Presents a Senior Piano Recital with Alison Brownstein. Recital will feature works by Bach, Beethoven and Chopin. Graham Chapel. Free. For more info., call 889-5581.

Friday, April 12

8 p.m. Dept. of Music Presents a Collegium Musicum Concert, directed by Bruce Carvell. Graham Chapel. Free. For info., call 889-5581.

EXHIBITIONS

"Roman Republican Coins." Through May 19. Gallery of Art, lower gallery, Steinberg Hall. Gallery hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Washington University Art Collections." Through May. Gallery of Art, lower gallery, Steinberg Hall. Gallery hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends.

"McDowell's College and Pope's College." Through April 19. Glaser Gallery, Room 702, School of Medicine Library. Hours: 8 a.m.-10 p.m. weekdays; 1-6 p.m. weekends.

"A Temple of Texts: Fifty Literary Pillars," selected by William Gass, WU David May Distinguished University Professor in the Humanities. Through April 15. Special Collections, Olin Library, Level 5. Exhibit hours: 8:30 a.m.-5 p.m. weekdays. A reception to mark the publication of the exhibit's catalog will be held from 4-6 p.m. April 14 in Special Collections.

"MFA I Exhibition." April 13-21. Opening reception: 5 to 7 p.m. April 12. Gallery of Art, upper gallery, Steinberg Hall. Hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends.

FILMS

Thursday, April 4

7 and 9:30 p.m. Filmboard Foreign Series Presents "The Bitter Tears of Petra von Kant," a German film with English subtitles. Room 100 Brown Hall. \$3. **For 24-hour Filmboard hotline, call 889-5983.**

Friday, April 5

7 and 9:30 p.m. Filmboard Feature Series Presents "Field of Dreams." (Also April 6, same times, and April 7 at 7 p.m.) Room 100 Brown Hall. \$3.

Midnight. Filmboard Midnight Series Presents "Children of the Corn." (Also April 6, same time, and April 7 at 9:30 p.m.) Room 100 Brown Hall. \$3. On Fri. and Sat., both the 9:30 p.m. and midnight films can be seen for a double feature price of \$4; both Sun. films can be seen for \$4.

Monday, April 8

7 and 9:30 p.m. Filmboard Classic Series Presents "The Court Jester," 1956. (Also April 9, same times.) Room 100 Brown Hall. \$3.

Tuesday, April 9

7 p.m. Dept. of Asian and Near Eastern Languages and Literatures Presents "Rashomon," a Japanese film with English subtitles. Room 100 Busch Hall. Free.

Wednesday, April 10

6 and 10 p.m. Filmboard Foreign Series Presents "The Seven Samurai," a Japanese film with English subtitles. (Also April 11, same times.) Room 100 Brown Hall. \$3.

7:30 p.m. Dept. of Romance Languages and Literatures Presents "Mon Oncle d'Amerique," a French film with English subtitles. Room 210 Ridgley Hall. Free.

Friday, April 12

7 and 9:30 p.m. Filmboard Feature Series Presents "Internal Affairs." (Also April 13, same times, and April 14 at 7 p.m.) Room 100 Brown Hall. \$3.

Midnight. Filmboard Midnight Series Presents "48 HRS." (Also, April 13, same time, and April 14 at 9:30 p.m.) 100 Brown Hall. \$3. On Fri. and Sat., both the 9:30 p.m. and midnight films can be seen for a double feature price of \$4; both Sun. films can be seen for \$4.

SPORTS

Friday, April 5

3:30 p.m. Women's Tennis Invitational. WU vs. Millsaps; Augustana vs. Principia. Tao Tennis Center.

Saturday, April 6

9 a.m. Women's Tennis Invitational. WU vs. Augustana; Principia vs. Millsaps. (At 1:30 p.m., WU vs. Principia; Millsaps vs. Augustana.) Tao Tennis Center.

Noon. Baseball. WU vs. Olivet Nazarene College. Kelly Field.

Sunday, April 7

1 p.m. Baseball. WU vs. MacMurray College. Kelly Field.

Tuesday, April 9

3 p.m. Men's Tennis. WU vs. Jefferson College. Exhibition game. Tao Tennis Center.

Wednesday, April 10

3:30 p.m. Women's Tennis. WU vs. Southern Ill. U.-Edwardsville. Tao Tennis Center.

Thursday, April 11

3 p.m. Baseball. WU vs. Maryville College. Kelly Field.

Friday, April 12

3:30 p.m. Women's Tennis. WU vs. DePauw U. Tao Tennis Center.

MISCELLANY

Thursday, April 4

10 a.m. Fine Arts Institute Workshop, "Beginning Drawing," with instruction by Betsy Schein Goldman, award-winning painter and writer. Workshop meets from 10 a.m. to noon for six Thursdays, ending May 9. Room 207 of The Center of Contemporary Arts, 524 Trinity Ave. Fee: \$95. For more info., call 889-4643.

Friday, April 5

9 p.m. Undergraduate Business School Council presents the Fifth Annual Casino Night. A small donation at the door buys "play money" for use in blackjack, craps, roulette and other games of chance. Prizes will be raffled throughout the event, which will end with an auction. All proceeds will be donated to the Girls Club of St. Louis. Admission is open to all students, faculty, alumni and their friends and families. Simon Hall.

Monday, April 8

9 a.m. Fine Arts Institute Workshop, "Seeing More Color." Workshop meets from 9 a.m. until noon daily through April 12. Instruction by painter Phyllis Plattner. Students will work in pastels or the medium of their choice. Room 207 of The Center of Contemporary Arts, 524 Trinity Ave. Fee: \$225. For info., call 889-4643.

1:30 p.m. Society of Professors Emeriti Lecture, "Psychoanalysis Evolving Toward the 21st Century," Paul Dewald, clinical prof. of psychiatry, St. Louis U. School of Medicine. Whittemore House. For info., call 889-5670.

Thursday, April 11

Noon-2 p.m. George Warren Brown School of Social Work Presents "Psychopharmacology: The Social Work Agenda," an interactive video conference for faculty, practitioners and students. Participants can call in questions to the six-person panel. Room 542 Jolley. For reservations, call 889-6612.

Calendar Deadline

The deadline to submit items for the April 11-20 calendar of the Record is April 5. Items must be typed and state time, date, place, nature of event, sponsor and admission cost. Incomplete items will not be printed. If available, include speaker's name and identification and the title of the event; also include your name and telephone number. Send items to Deborah Parker, calendar editor, Box 1070, or by electronic mail to p72245DP at WUVMC.

Group tennis lessons offered

The Department of Athletics will offer adult group tennis lessons for beginning and intermediate players. Lynn C. Imergoot, women's tennis coach at the University, will teach the classes, which are offered from April 29-May 22.

Classes will meet on Monday and Wednesday evenings (beginners from 5:15 to 6 and intermediate from 6:15 to 7) at the Tao Tennis Center. Class size for each session is limited to 16 participants. The eight lessons cost \$45.

Application forms are available at the athletic department office in the Athletic Complex. For more information, call 889-5220.