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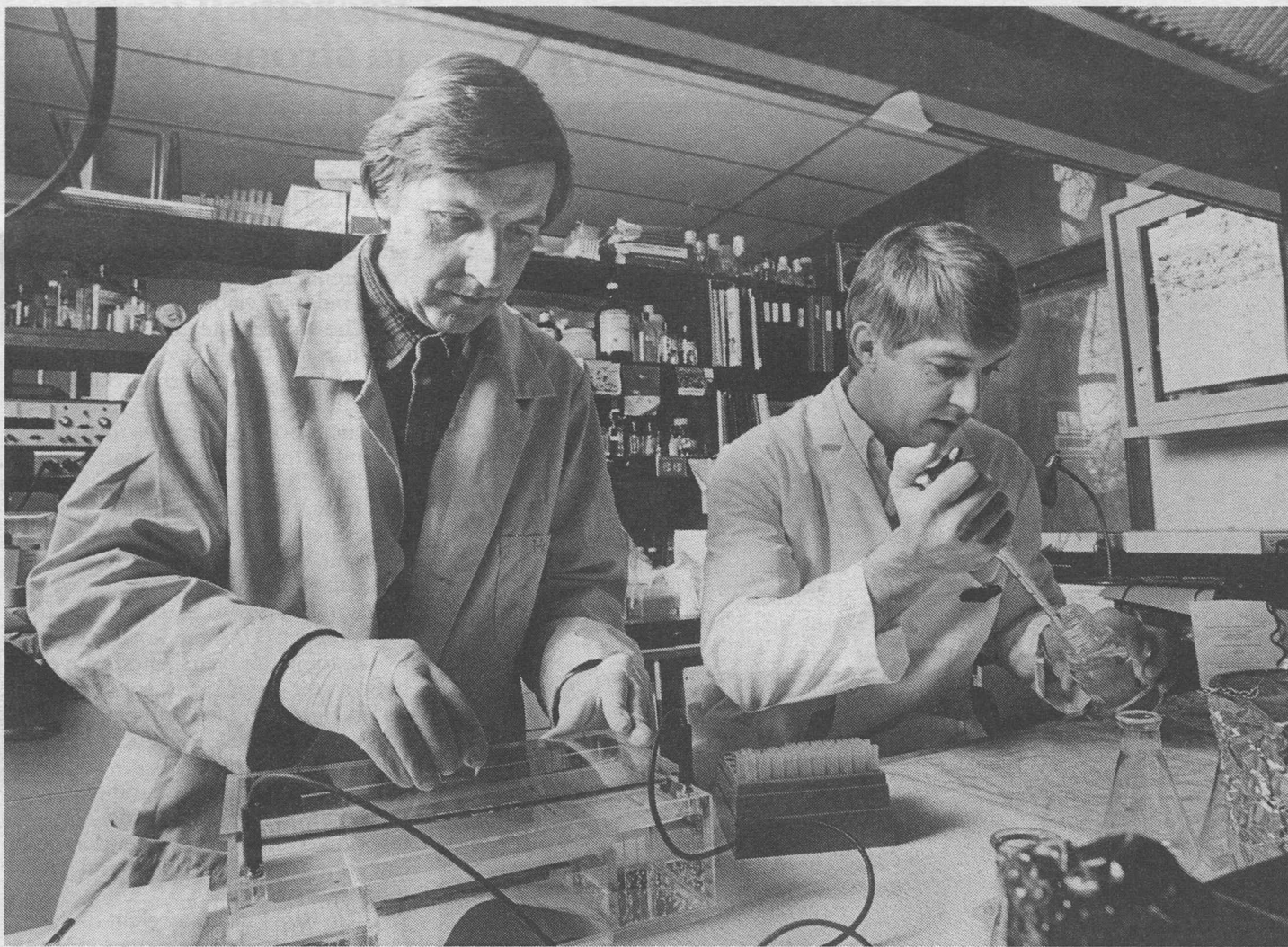
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RECORD



Claude Fauquet (left), plant virologist with the French Institute of Scientific Research for Development Through Cooperation, and Roger N. Beachy, Ph.D., professor of biology, purify a virus gene that infects cassava, a vital Third World crop, by using a technique called gel electrophoresis. The scientists are attempting through genetic engineering techniques to develop cassava plants resistant to serious virus diseases.

Resisting disease

Vital Third World crop is focus of international research team

Washington University scientists are collaborating with French scientists, who are working here, to genetically transform a vital Third World crop to improve its resistance to serious virus diseases.

This joint study is co-sponsored by the Rockefeller Foundation and the French government research group, the Institute of Scientific Research for Development Through Cooperation (ORSTOM).

Using genetic engineering techniques pioneered by Roger Beachy, Ph.D., professor of biology and director of the University's Center for Plant Science and Biotechnology, the international team is attempting to develop cassava plants resistant to African cassava mosaic virus, a disease that affects 90 percent of the cassava crop in West Africa, and cassava common mosaic virus, a serious disease in Latin America.

It is estimated that some 800 million people worldwide are reliant on cassava, a root crop similar to the potato. A carbohydrate-rich staple in African and Latin American countries, it is grown in the U.S. mainland only in a small area near Miami, Fla. Agricultural experts estimate that hundreds of West African tribes use as many as 300 different varieties of cassava in an assortment of foods.

The Rockefeller Foundation of New York is funding the research at \$300,000 for three years; ORSTOM is contributing \$600,000 for three years.

The endeavor is one of the first thrusts of Washington University's two biotechnology centers to bring the "new biology" to agricultural and medical problems in developing nations. (The other center is the Center for Resource Biotechnology, directed by Roy Curtiss III, Ph.D., chair of the biology department.)

Beachy heads the research team, which includes Claude Fauquet, Didier

Bogusz and Claudine Franche from ORSTOM; Lee Calvert, an American scientist recently affiliated with the International Center of Tropical Agriculture in Colombia; and Christian Schoepke, a specialist in plant tissue culture from the German research group GTZ. All but Schoepke are now working in St. Louis.

"This is an outstanding opportunity to apply biotechnology to areas of the world where solutions are needed quickly," says Beachy, who is internationally known for developing, with scientists from Monsanto Co., the world's first genetically engineered food crop (tomatoes) resistant to a virus infection.

"Working with this plant and two important virus diseases is a logical extension of our earlier work with tomatoes. The genetic engineering techniques we will employ will allow a much faster development of resistant plants than more conventional cross-breeding or inoculation procedures."

In the mid-1980s, Beachy and his collaborators worked to "design" tomatoes to make the small protein that surrounds the genome of the tobacco mosaic virus (TMV). The presence of this coat protein in each cell of the tomatoes plays a protective role in preventing the tomatoes from becoming infected. Beachy's international team is essentially trying to duplicate this feat with cassava plants. Commercial seedstock of the transgenic tomatoes should be on the market in the early to mid-1990s.

"ORSTOM was interested in Washington University because the technique was first described here and Dr. Beachy has had considerable success," says Fauquet, a veteran scientist who has worked on plant viruses in West African countries for 14 years. "We didn't want to work with something that might take 10 years for success."

ORSTOM has never before sent scientists to another country to learn a technology, says Fauquet. The French scientists intend to learn the technology in two or three years and then develop a similar laboratory in France. ORSTOM consists of more than 2,000 scientists working for the improvement of science in 53 different countries, many of them former French colonies.

Cassava originated in Latin America where the cassava common mosaic virus does not do nearly as much damage as the African mosaic virus does to African cassava varieties, called "clones." Each year, of 57 million harvested tons of cassava tubers in West Africa, an estimated 50 million tons are afflicted with the disease, which is transmitted by a small white fly, *Bemisia tabaci*.

Because Africa's largely subsistence farmers cannot afford chemical control of the vector, they rely on the availability of resistant or virus-free clones. But only about 10 percent of the planting stock survives the virus each year, and those clones that do often produce tubers that are bitter. "These farmers choose clones by eye- or taste-appeal," says Beachy. "While this may produce a generation or two of tasty cassava, the virus spreads rapidly and invades the formerly virus-free clones. It's only a matter of time before the clones become unable to produce the expected amount of roots."

Beachy and Fauquet hope success with the cassava viruses will open the doors for the development of transgenic Third World plants resistant to other diseases.

"The toughest part of the job is getting the gene into the plant," Fauquet says. "We think the technology developed here in St. Louis will significantly speed the task."

Tony Fitzpatrick

\$1.2 million

Keck Foundation to support medicine, science

The W. M. Keck Foundation of Los Angeles has awarded Washington University \$1.2 million, Chancellor William H. Danforth has announced.

According to Danforth, \$900,000 of the total will support named W. M. Keck Foundation research fellowships at the School of Medicine; \$300,000 will support work in the Department of Earth and Planetary Sciences.

The fellowships at the medical school will be administered by Daniel L. Hartl, Ph.D., James S. McDonnell Professor of Genetics and head of the Department of Genetics. The criteria for selection of these fellows will be demonstrated talent in basic science and potential for establishing promising independent research careers. They will work in departments such as genetics, immunology, pharmacology and neurobiology.

The \$300,000 to the Department of Earth and Planetary Sciences will purchase equipment for its remote sensing laboratory to support research and teaching. The grant will be administered by Raymond E. Arvidson, Ph.D., professor of earth and planetary sciences.

The equipment will be used for image processing and digital cartography research and will support the geological analyses of data from the Magellan, Mars Observer, and Earth Observing missions.

Danforth said this support came at a critically important time in the University's history. "Washington University is extremely grateful for this generous expression of support from the W. M. Keck Foundation. Their support for science and medicine will significantly strengthen our research endeavors and will encourage young scientists working in important new fields of inquiry."

The W. M. Keck Foundation, one of the nation's largest foundations in terms of annual grants, was established in 1954 by the late William M. Keck, founder of the Superior Oil Co., who also created in his will the W. M. Keck Trust for the benefit of the foundation. The foundation's primary focus is on grants to universities and colleges throughout the United States, with particular emphasis in the fields of earth sciences, engineering, and medical research. It also provides limited support, focused on programs serving Southern California, in the areas of community services, health care, pre-collegiate education, and the arts.

Archbishop May will speak here

Archbishop John L. May will present the CIRCUIT Lecture in the Assembly Series at 11 a.m. on Wednesday, Feb. 1, in Graham Chapel. May, Archbishop of the St. Louis Archdiocese, will speak on "The National Conference of Catholic Bishops: Partners in Social Justice." The event is free and open to the public.

May is president of the National Conference of Catholic Bishops and the United States Catholic Conference. The National Conference of Catholic Bishops is a forum for U.S. bishops to collaborate on issues pertaining to the Roman Catholic Church. He is also a member of the Missouri Christian Leadership Forum and the National Conference of Christians and Jews.

May was installed as the seventh archbishop of the Archdiocese of St.

Continued on p. 8

A chance to step back and reflect

Advanced study expands executives' views

As a partner and chairman of the tax department at the high-powered law firm of Thompson & Mitchell, Millard Backerman's typical day doesn't normally include discussions on modern bureaucracy or religion in the Islamic world.

But Backerman has developed a fondness for and curiosity about such topics as a Fellow in Washington University's new Executive Institute for Advanced Study. The institute, launched this past fall by University College, offers business and community leaders a chance to step back and reflect, in a stimulating environment, on subjects affecting society and their professional and personal lives.

According to William Kirby, Ph.D., dean of University College and co-coordinator of the institute, "The basic premise of the institute is that successful executives today can't afford to be too specialized. Leaders must in large measure be generalists, open to new ways of looking at the world and the workplace."

The institute teams leaders from the community with Washington faculty in a series of monthly seminars that began last October and continue through April. Kirby says the aim of the institute is to apply insights from the humanities and social sciences to help executives discern broad trends, respond creatively to change and make informed ethical decisions.

Wayne Fields, Ph.D., associate professor of English and co-coordinator of the institute, says the goal "is to complicate people's lives." Fields, who chairs each institute session, says "the complications involve recognizing other perspectives and the implications of those perspectives."

The theme of this year's institute is "Dilemmas of Power and Choice: Corporate Structures and Individual Values." The program confronts the tensions inevitable in organizations — ranging from corporations to great empires — that value both individualism and group loyalty. The 26 Fellows and the faculty explore such questions as: what constitutes "disloyalty?" What constitutes "corruption" in different cultural settings? What, ultimately, is the nature of corporate responsibility toward our "commonwealth?"

The Washington University faculty presenting the seminars include scholars in history, anthropology, literature, law, political science, public affairs, biology, chemistry, psychology and business.

In the first session, Robert H. Salisbury, Ph.D., political science chairman and Sidney W. Souers Professor of American Government, discussed how large organizations affect Americans' personal lives. "Americans really spend most of their lives in the impersonal environments of large organizations," he says. "As a consequence, our ability to control our environment is small."

"But, at the same time, our ideas remain individualistic. We believe our voice and vote counts. We believe we can work out our own destinies and that is not true. There is a real tension between what we believe and our actual circumstances."

For Backerman, participating in the Executive Institute for Advanced Study is an "exhilarating experience. Frankly, it's almost like going back to school and I love it. What I'm getting out of this helps me in my profession because my mind is expanding. I'm hearing a diversity of views. The process of examining the differing points of view that are expressed throughout these seminars is not



Participants in the University's new Executive Institute for Advanced Study include Lee Liberman (foreground), chairman, president and chief executive officer of Laclede Gas Co., and Millard Backerman, a partner and chairman of the tax department at the law firm of Thompson & Mitchell.

dissimilar from what goes on in the practice of law."

The institute also has spurred Backerman to "re-examine basic social and moral concepts that I had taken for granted. I don't think that you can be involved in a program like this and NOT modify some of your preconceptions about the potential for conflict between group needs and the protection of individual rights."

The institute Fellows represent a wide range of St. Louis corporations, banks, law firms, and governmental and educational institutions.

Among the Fellows are Lee Liberman, chairman, president and chief executive officer, Laclede Gas Co.; Standley Hoch, executive vice president and chief financial officer, General Dynamics Corp; John R.

Johnson, headmaster, St. Louis Country Day School; J. Kent McNeil, regional president and chief executive officer, Landmark Bank of St. Charles; Jane McNeil, partner, Bluepoint Investment; Gene McNary, St. Louis County Executive; Walter R. Maupay Jr., president, Calgon Vestal Laboratories; and Ruth L. Fischbach, Ph.D., research assistant professor of sociology in psychiatry at the Washington University School of Medicine. An interesting feature of the institute is that spouses are invited to attend as full participants.

Because of the high interest generated by the institute and the limited space for it, a second institute will be held October through April of the 1989-1990 academic year.

Carolyn Sanford

Bookmark Society alters member benefits

To accommodate the changing needs of its members and the Olin Library System, the Bookmark Society has been restructured. The society, created in 1984, is a literary and support organization of the Washington University Libraries.

As of Jan. 1, the Bookmark Society operates on a two-tiered membership system. The basic level of membership (Friend) will remain at \$25 a person and \$35 a couple per year. At this level, members obtain all benefits, except library borrowing privileges. The benefits include free admission to literary programs, participation in book discussion groups and receipt of the libraries' newsletter and announcements.

Individuals who want library borrowing privileges may join the Bookmark Society at the second level

(Patron) for \$100 a year.

Burton M. Wheeler, Ph.D., interim dean of University Libraries, says the restructuring was needed because "a growing segment of those joining the Bookmark Society have been doing so primarily to receive library borrowing privileges — making heavy demands upon library staff and services at a time when human and financial resources are being stretched to the limit."

"Since there have emerged two distinct groups of members within the society," he adds, "we felt the structure of the organization should reflect those differences."

Current Bookmark Society members may use their membership cards to check out books through the expiration date indicated on their cards.

For information, call 889-5400.

Basketball teams in strong position at midway point

In the vernacular of the sport, it's halftime for the men's and women's basketball teams. Both Bear squads have reached the midpoint of their seasons in excellent shape, with conference titles and national tournament bids still viable possibilities.

The women's team is ranked fourth in the NCAA Division III Central Region with a 10-3 overall record. The Bears' 3-1 mark within the University Athletic Association places them second in the conference standings. A handful of well-timed buckets are what separates the Bears from having a perfect record. The Bears have lost in overtime to Augustana, the region's top-ranked team; by two points to Division II Missouri-St. Louis; and by four points to UAA foe Rochester.

Leading the Bears' efforts have been a pair of forwards, sophomore Karen Hermann of Worthington, Ohio, and junior Rochelle Meyers of Valparaiso, Ind. Hermann paces the team in both scoring and rebounding, carrying averages of 13.3 and 7.5, respectively. Meyers is second in both categories, with 12.6 points and 7.5 rebounds per game.

The Bears will play eight of their final 12 regular season games at home. This bodes especially well considering Washington University's current 25-game home winning streak, which dates back to Valentine's Day 1986.

Despite losing four starters and 80 percent of last season's offensive punch, the men's team has catapulted to a 11-5 start and a number-four ranking in the NCAA Division III South Region. The Bears' 3-2 conference record rates fourth in the UAA. Included in the win column were back-to-back victories against pre-season UAA favorites Emory University and New York University. The Bears stunned the nationally ranked Eagles 97-56, and then toppled the Violets 79-57 the next evening.

Statistical leaders for the Bears are junior forwards Scott Owens of Woodlawn, Ill., and Rick Robinson of St. Louis. Owens leads the team with averages of 15.3 points and 7.8 rebounds per game; Robinson ranks second with 14.6 points, 6.1 boards.

The men's quest to retain their UAA crown will be aided by the fact that the Bears host five of their final eight conference games. To date, the home team has emerged victorious in 22 of 25 UAA contests this season.

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NOTABLES

Garland E. Allen, Ph.D., professor of biology, presented a seminar to the Department of Evolution and Ecology at the University of Minnesota-Minneapolis. The title of the seminar was "Race Horses and Draft Horses: Genetics, Eugenics and Agricultural Reform in the United States, 1900-1930." The talk deals with the role of agriculture in stimulating work on both genetics and eugenics during the Progressive Reform era around the turn of the century.

Joyce Berg, Ph.D., assistant professor of accounting, presented a paper at the Economic Science Association fall meetings, held in Tucson, Ariz. The paper, co-written with J. Dickhaut, is titled "Evaluation of Alternative Explanations of the Preference Reversal Phenomenon: Experimental Evidence." At the American Accounting Association meetings, held in Orlando, Fla., she presented "Informativeness and Value of Public Information: An Experimental Test."

Merton C. Bernstein, LL.B., Walter D. Coles Professor of Law, and his wife, **Joan Bernstein**, a second-year law student, who collaborated on a recently published book on Social Security, were interviewed for an educational video. Organizations supporting the Social Security program plan to use the video to orient members of Congress and their staffs early this year. In addition, Merton Bernstein was the keynote speaker at the annual meeting of the National Association of Meal Providers. He spoke on "The Post-Election Peril to Social Security and Medicare." He also participated in a small conference convened by the public trustees of Social Security to discuss problems and potentials of the Social Security trust fund surplus.

George Bohigian, M.D., associate clinical professor of ophthalmology, represented the American Medical Association as a moderator at a symposium titled "Medical Technology in an Era of Cost Containment," in Chicago, Ill. The conference explored innovative and prudent development of drugs, devices and procedures.

Kathleen F. Brickey, J.D., professor of law, has been elected to membership in the Society for the Reform of the Criminal Law. The society, an international organization, seeks to bring together leading legislators, judges, government officials, lawyers and academics to work actively to improve the criminal law and the administration of criminal justice in their own jurisdictions and internationally. Her 1987 Emory Law Journal article, "Attorneys' Fee Forfeitures: On Defining 'What' and 'When' and Distinguishing 'Ought' From 'Is,'" has been republished in *Criminal Law Review*. This 1988 book is the 10th in a series of annual anthologies of timely and significant articles on criminal law and procedure. This is the second consecutive year that one of her articles has been selected. The 1988 supplement to her three-volume treatise, *Corporate Criminal Liability*, was published by Callaghan and Company.

Nicholas C. Burckel, Ph.D., director of public services and collection development in the Olin Library System, has been appointed to serve in two professional capacities for the Association of College and Research Libraries (ACRL). He will serve on the editorial board for the association's publication, *College and Research Libraries News*, and as a member of the ACRL Special Fund Committee, which provides special grants for activities within the organization. Burckel also has been elected to the Council of the Society of

American Archivists, the governing body of the national professional organization for archivists. In addition, he served as chair and commentator for the Plenary Session of the Midwest Archives Conference held recently in Cincinnati, Ohio. The title of the session was "Organizing America's History Business."

Samuel E. Guyer, D.D.S., professor emeritus of restorative dentistry, has been reappointed chairman of the Examining Committee for the Specialty of Prosthodontics for 1989 by the Missouri Dental Board.

Roland Jordan, Ph.D., associate professor of music, and **Emma Kafalenos**, Ph.D., lecturer in comparative literature, spoke on "Making Music and Literature: An Introduction to Comparative Arts" at the seminar on Teaching Music and Literature at a meeting of the Midwest Modern Language Association held in St. Louis. Jordan and Kafalenos presented performances and readings of works by Washington University students and analyzed the relationship between the structure of the course and the students' accomplishments.

Stanton D. Krauss, J.D., associate professor of law, has accepted an invitation to give a faculty seminar this semester at the University of Cincinnati Law School on a work in progress concerning whether the Sixth Amendment is violated by the current practice of disqualifying jurors unwilling to apply the criminal law.

Udo Kultermann, Ph.D., the Ruth and Norman Moore Professor of Architecture, completed a comprehensive article about "Southeast Asian Architecture" for the *Encyclopedia of Architecture: Design, Engineering and Construction*, which will be published by the New York publisher John Wiley and Sons. Kultermann's manuscript deals with Hong Kong, Indonesia, Singapore and Thailand.

Stephen H. Legomsky, J.D., professor of law, will have his article on "Political Asylum and the Theory of Judicial Review" published in the *Minnesota Law Review*.

Carol A. Mershon, Ph.D., assistant professor of political science, has received a Fulbright-Hays Research Scholar Grant for field research on local political party organizations in Italy.

Richard H. Popkin, Ph.D., professor emeritus of philosophy, spoke on "1688 and the Deists in England" at a conference on "From Perspective to Toleration, Religious Minorities in Britain Before and After 1688-89," held in London. The conference was sponsored by the William and Mary Tercentenary Trust. Popkin also wrote an article, "Newton's Biblical Theology and his Theological Physics," that has been included in *Newton's Scientific and Philosophical Legacy*, by P.E. Scheurer and G. Debrock, Kluwer Academic Publishers, Dordrecht 1988.

William Quinn, professor of fine arts, has had his oil painting "Halley's Comet Over Webster Groves" acquired by the Museum of Art and Archaeology, University of Missouri-Columbia. This is the second of Quinn's works to be part of that institution's permanent collection.

Samantha Rainwater, central stores manager, was elected treasurer of the Missouri-Iowa-Nebraska-Kansas regional group of the National Association of Educational Buyers at the group's annual meeting in Ames, Iowa.

Strano named assistant dean of students

Donald A. Strano, Ph.D., has been named assistant dean of students for special services, according to Harry E. Kisker, vice provost and dean of Student Affairs. Previously, he was a psychologist with the Student Counseling Service.

Strano's position will involve the coordination of programs and services related to handicapped student services, alcohol and substance abuse, and emergency and crisis counseling.

"We are pleased that Don Strano has accepted these important responsibilities that we now have combined

under one office. He brings excellent experience and leadership to areas that we believe deserve continuing concern and attention," Kisker said.

Strano's office will be located in Room 302 at Mallinckrodt Center. He will report to Adrienne L. Glore, associate dean of students.

Strano holds a master's and a doctorate in counseling from Texas Tech University, and an undergraduate degree from Penn State. He has worked at Washington University since 1984.

Engineers' society elects Sutera a fellow

Salvatore Philip Sutera, Ph.D., chairman of the Department of Mechanical Engineering, has been named a Fellow by the American Society of Mechanical Engineers (ASME).

This grade, the highest grade of membership in the society, is conferred upon a member with at least 10 years active engineering practice who has made significant contributions to the field.

ASME is a technical and educational organization with 116,400 members, including 19,200 students. It conducts one of the world's largest technical publishing operations, holds more than 30 technical conferences

each year and sets many industrial and manufacturing standards.

Sutera's election was in recognition of his research, teaching, administration, consulting and activity within the society.

His research is in the field of hemorheology, particularly with the motion of red blood cells. He has more than 40 publications in this area.

Sutera was appointed chairman of the mechanical engineering department in 1968 and was reappointed in 1986 after three years devoted to research and teaching. He is president of the North American Society of Biorheology.

Thomas Schiff, D.M.D., associate professor and chairman of the Department of Radiology at the School of Dental Medicine, lectured during the 10th Mexican Dental Federation meeting, held in Mexico City. He spoke about radiation safety as well as preventive dentistry. Schiff recently received the U.S. Air Force Commendation Medal for Meritorious Service. The commendation reads, "These distinctive accomplishments of Colonel Schiff reflect upon himself, the Air National Guard and the U.S. Air Force."

Harold R. Schreiber, D.M.D., professor of clinical periodontics at the School of Dental Medicine, has been selected to serve on the American Red Cross Bi-State Tissue Services medical advisory committee. The committee provides guidance in both medical and regulatory affairs and helps provide scope and direction for tissue services.

Lee Sobotka, Ph.D., assistant professor of chemistry, has been elected chair of the Users Executive Committee of the National Superconducting Cyclotron Laboratory, located at Michigan State University. This facility has built all of the superconducting cyclotrons operating in the United States and operates two of the machines. A new cyclotron with almost twice the energy of any of the earlier machines is beginning operation.

Michael Valente, Ph.D., assistant professor of otolaryngology and director of the adult audiology program, recently delivered a paper titled "Preferred Versus Prescribed Insertion Gain" at the American Auditory Society in Boston. The paper was based on a study Valente did on 28 experienced hearing aid users. Also contributing to the paper were **Marti Meister**, clinical audiologist; **Peter Smith**, M.D., Ph.D., assistant professor of otolaryngology; and **Joel Goebel**, M.D., assistant professor of otolaryngology.

Suzanne Wilson, a doctoral candidate in comparative literature, had her paper "Auto-bio-graphie: vers une theorie de l'écriture feminine" accepted for publication in *French Review*. The paper will appear in the March 1990 edition.

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.

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.

"Bless Murray Weidenbaum. Even though he's a former chairman of President Reagan's Council of Economic Advisers, he has written a book that's an intelligent analysis of this administration's economic track record and the challenges awaiting the next president," says a review of *Rendezvous With Reality* that appeared in the

Nov. 3 issue of *USA Today*. Weidenbaum's book also was reviewed in the Oct. 16 issue of the *Los Angeles Times*.

The Whiting Writer's Award winners were announced in the Oct. 28 *New York Times* and Gerald Early, Ph.D., assistant professor of English and African and Afro-American studies, was among the 10 recipients nationwide. The awards, sponsored by the Whiting Foundation, seek to recognize writing potential and reward achievement. Another article about Early's award appeared in the Nov. 28 issue of *Jet* magazine.

MEDICAL RECORD

Heart implant puts spark back in child's life

Pamela Shadwick used to charm her daughter Jaime to sleep each night with stories spun from real-life events of the 10-year-old's day.

This fall, though, she ran out of material for those innocent tales of summer camp and family vacations. Jaime's heart suddenly began malfunctioning and the little girl's life took on a nightmarish quality: nine times over the course of a few months, ventricular fibrillation — erratic, ineffective pumping — caused her heart to stop working. Each time Jaime was resuscitated. However, her doctors, a team from the School of Medicine, were unable to find a cause for the abnormal rhythms or a medication to stop them from occurring.

The happy ending came when they decided to implant a cardiac defibrillator, making Jaime the first child at Washington University Medical Center — and the fifth one in the country — ever to receive the device, which has saved the lives of thousands of adults. Defibrillators work by delivering a shock that literally restarts a heart that has stopped beating.

"Jaime would have been a walking time bomb if we had let her leave the hospital without being protected," says cardiologist Tom Martin, M.D., an assistant professor of pediatrics. "Her heart can go into fibrillation at any time, without apparent cause. In children, that is a very rare heart problem."

The decision to implant cardiac defibrillators in children is unusual, Martin says, because the device is made for adults. An adult body can

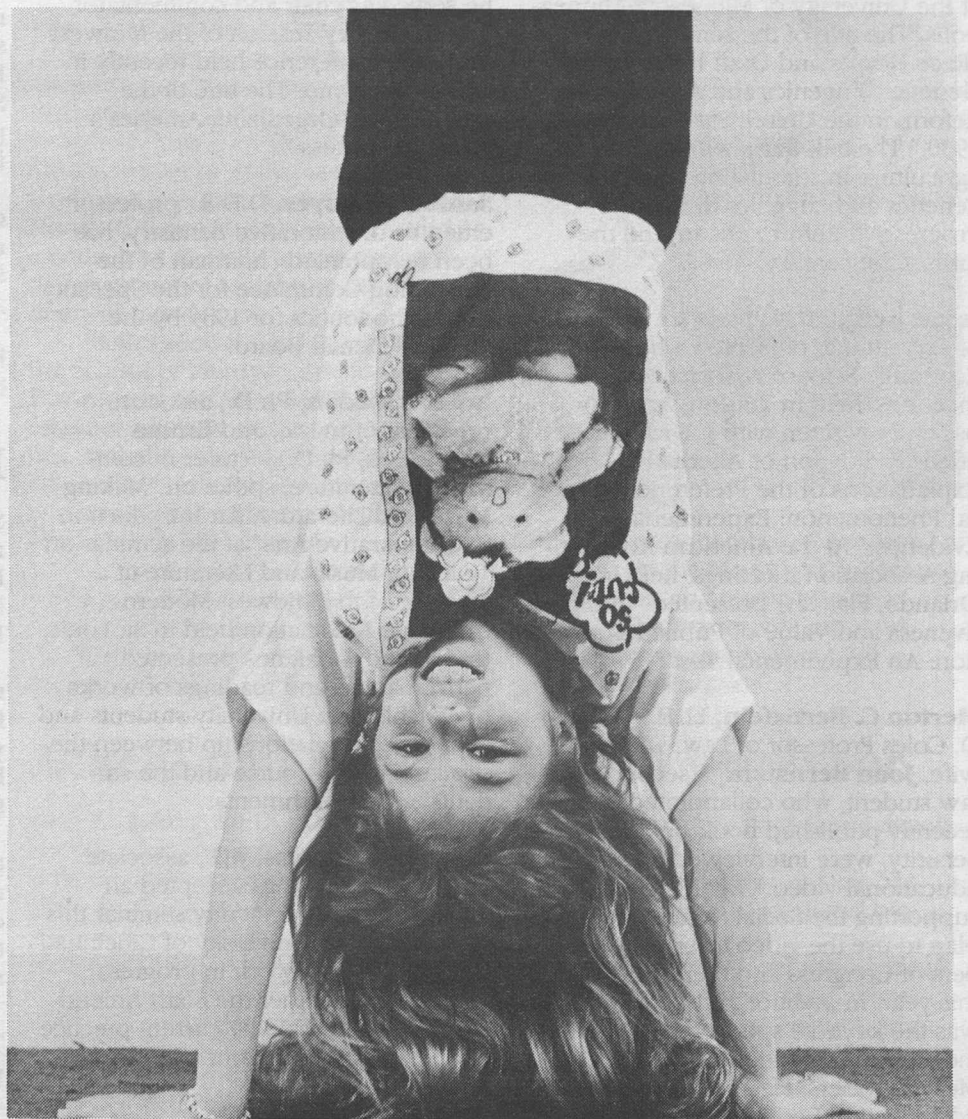
diagnostic possibilities — viral infection affecting the heart, a tumor of the heart, abnormal heart muscle development, a defect in the coronary arteries limiting blood flow — but one by one ruled them out. "We did every test you could possibly do and found nothing. Her heart was working well," says Martin. "Then we performed an electrical study to see if we could make her heart beat erratically, the way it had when she was taken to the hospital near her home."

The procedure, called an electrophysiology study, paces the heart and then electrically puts in extra beats. Adding extra beats will not adversely affect a normal heart, but can trigger ventricular fibrillation in abnormal hearts. For a patient like Jaime, the test is risky, but it's the only tool physicians have for testing the effectiveness of various medicines in preventing further episodes of fibrillation. Jaime underwent the test seven times.

"At Children's Hospital, Jaime never went into ventricular fibrillation on her own," Martin says. "But every time we took her to the lab, no matter what medication we used, we were able to start up this very dangerous rhythm. And each time we did, we would have to shock her out of it."

Clearly, there was no alternative but to implant a defibrillator in Jaime. The miniature device, developed in the late 1970s and first released by the FDA for general clinical application in 1985, works by keeping track of heart rate.

"Defibrillators implanted in adults have been very effective," notes



Jaime Shadwick does a handstand to prove she's back to her old self since receiving a heart defibrillator.



Jaime at home with her mother, Pamela Shadwick.

easily accept the defibrillator, which at three-by-four inches is about the size of a Sony Walkman, but in a child's body, the fit is not an easy one.

The question was how to place the unit into the body of a 4-foot, 5-inch, 70-pound girl without handicapping her. The answer came from Martin and his colleagues, James Cox, M.D., professor of surgery and head of the division of cardiothoracic surgery, and electrophysiologist Bruce Lindsay, M.D., an assistant professor of medicine and expert on defibrillators.

Jaime first came to their attention in August 1988 when she was transferred to St. Louis Children's Hospital at the medical center. Her parents, unable to wake her for breakfast, had rushed her to their local hospital; in an hour's time she had twice gone into ventricular fibrillation in the emergency room.

"This is an abnormal rhythm that we do not normally see in children," Martin says. "It is more common in people who have had heart attacks who are very old."

He considered a number of

Lindsay. "The risk of sudden death has been reduced from 50 percent to about 3 percent, so they have a dramatic impact on mortality. In patients with ventricular fibrillation, this is clearly the most effective treatment we have. Even patients who seem to be responding to drugs tend to break through occasionally, so the defibrillator has a much better track record than drug therapy."

Though the defibrillator has a proven track record, physicians have been reluctant to implant them in children. The thinking has been that medication, even with uncomfortable side effects, is preferable to the risk of handicapping movement; conceivably, the device could prevent a child from simple activities like sitting up or bending over.

"From a surgical standpoint, putting one of these things in adults is a routine procedure, like implanting a pacemaker," Cox explains. "In Jaime it was entirely different because we weren't sure it would fit. We spent a good while over in her hospital room, placing a model of the device on

various parts of her body to decide where we could put it."

In an adult, the defibrillator is usually put under the skin just below the ribs, but Jaime's body was too little for that placement. Cox considered putting it in her chest, but discarded the idea because it would require chest operations every three years to replace the battery. He opted instead to put it sideways in the abdomen behind the stomach muscles, running wires from the unit up to two patches on either side of her heart.

During the operation, conducted in October 1988, none of her organs had to be shifted, and the device was enclosed in a special surgical sheet so that only one incision will be needed to replace the battery. It is set so that if Jaime's heart exceeds 200 beats per minute, the defibrillator interprets whether the heart rate is due to exercise or to an erratic beat. If ventricular fibrillation is detected, a shock is delivered within 20 seconds.

And, Cox says, it looks like the defibrillator's location won't hamper Jaime's growth. That had been a major concern.

According to Lindsay, the four children who received implants before Jaime were either bigger, meaning the implant was easier to fit, or they had suffered some neurological damage that prevented free movement. Jaime was not only extremely small, but was normal neurologically, and her doctors did not want to restrict her movement or prevent her from leading a normal, active life.

As it turns out, they didn't.

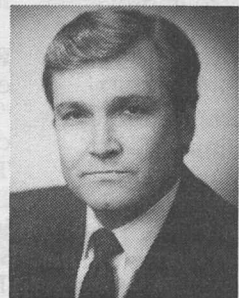
Cox was delighted when, on a recent follow-up visit, Jaime leaned over and touched her toes to prove that her movement is fine. Cartwheels, she says, are no problem.

Cox would not be surprised to see an increase in the future in the number of children receiving defibrillator implants. He compares it to the congenital heart condition known as Wolff-Parkinson-White syndrome. "Fifteen years ago, WPW syndrome

hardly existed because nobody ever heard of it," he comments. "Now we're realizing that it occurs in 1 out of every 1,000 patients. It's the most common heart operation we do."

Jaime faces further surgery, an operation every three to five years to replace the defibrillator's battery. If the device hasn't fired after eight years, and if Jaime's heart tests normally when doctors try to induce fibrillation, the unit may be removed. Until then, the sixth-grader's schedule will include visits to Lindsay every two months.

Lindsay, as the electrophysiologist, is responsible for keeping Jaime's defibrillator in good working order. During her operation he calibrated the unit to give her the proper dosage of electricity for shocking her heart back into motion. A week after the surgery,



(Clockwise from top left) James Cox, Tom Martin and Bruce Lindsay made the decision to implant a defibrillator in Jaime, making her the first child at Washington University Medical Center and the fifth one in the country ever to receive the device.

in order to test the device, he had to cause Jaime's heart to fibrillate one last time. "That was the longest 20 seconds of my life, watching her lay there with this essentially lethal arrhythmia and waiting for this device to get her out of it," Lindsay says, "But it worked like a charm."

Joni Westerhouse

Controlling diabetes with antidepressants; study seeks patients

Volunteers are needed for a study to see whether diabetics with poorly controlled blood sugar levels can benefit from the addition of antidepressant or anti-anxiety drugs to their usual regimen of diet and insulin.

The novel study, a combined effort of the departments of internal medicine and psychiatry at the School of Medicine, will be directed by Patrick J. Lustman, Ph.D., assistant professor of medical psychology in psychiatry. Lustman and his colleagues believe that drugs conventionally used as treatment for depression and anxiety may improve glucose control even in diabetics who are psychologically healthy. Therefore, the study is open to all diabetics whose blood sugars regularly run somewhat high, whether or not they have psychological disorders.

Depression and anxiety disorders are three to four times more common among adult diabetics than they are among the general population, Lustman notes. This investigation is an extension of Lustman's previous research on the interrelationship of depression and diabetes. Funded through several grants from the National Institutes of Health, he has conducted numerous studies characterizing the course of depression and anxiety disorders in diabetic patients, and describing their relationship to glucose regulation and to common complications of diabetes, such as retinopathy.

For the current project, Lustman seeks insulin-treated diabetic patients whose glucose has been difficult to control. Volunteers must be between the ages of 18 and 65. Participants will receive either nortriptylene for depression, alprazolam for anxiety, or a placebo, for eight weeks. Benefits will be assessed after that time and relayed to the patient's physician. All patients will be evaluated medically to determine their ability to participate. The evaluation, all treatment, and parking are free.

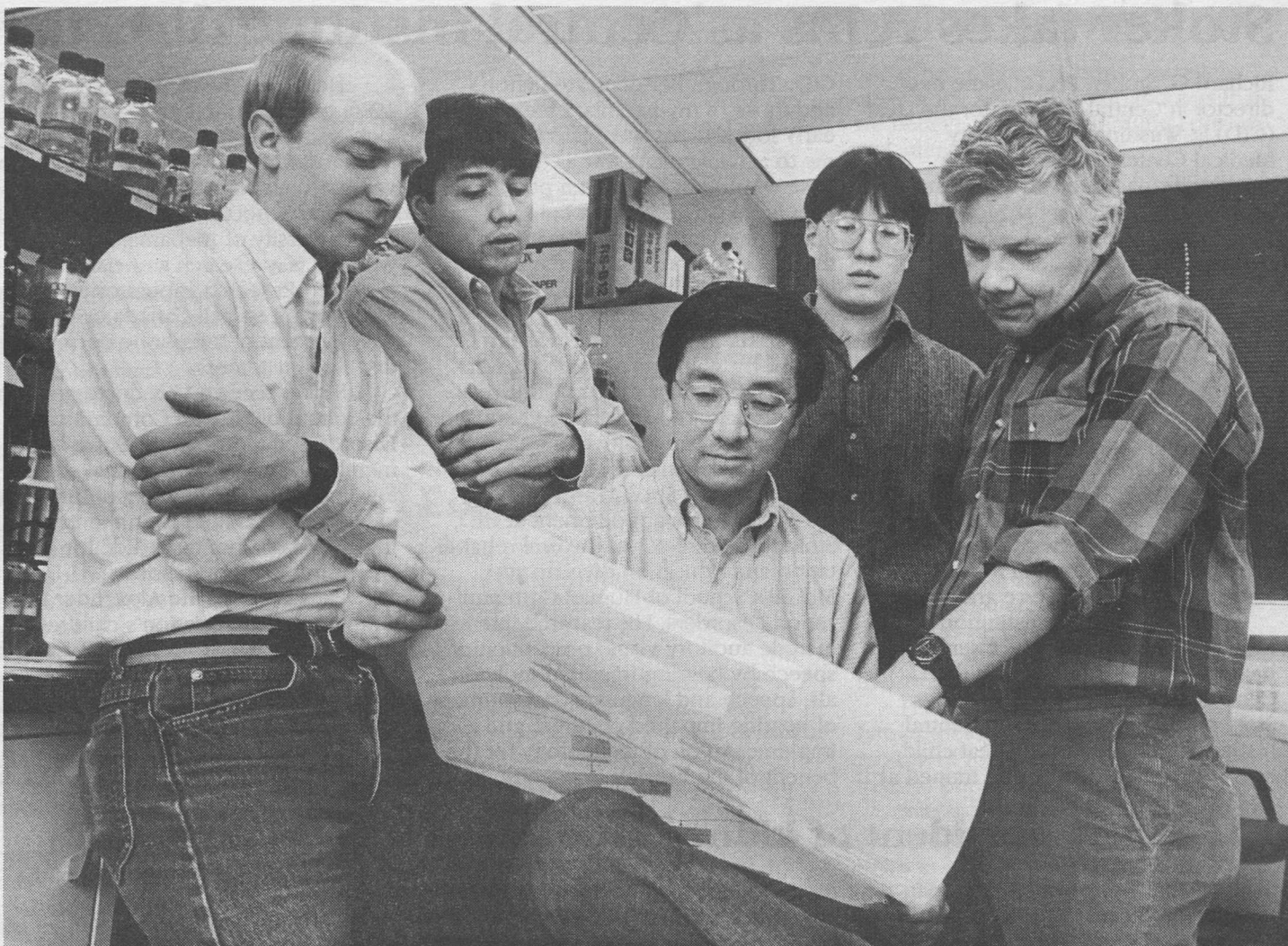
For more information, call Linda Griffith, study coordinator, at 362-2441.

Alzheimer's association awards Berg for service to the community

Leonard Berg, M.D., professor of clinical neurology at the School of Medicine, has been selected as a recipient of the 1988 Public Service Award of the St. Louis Chapter of the Alzheimer's Disease and Related Disorders Association.

The Alzheimer's Association honored Berg for his leadership and guidance in establishing the local chapter, and for his continuing contributions to the growth of the organization. Berg is director of the Washington University Alzheimer's Disease Research Center (ADRC), one of only 12 centers in the U.S. funded by the National Institute on Aging to study the disease. He is also program director of the School of Medicine's Memory and Aging Project, a long-term study of intellectual function in older adults.

The Alzheimer's Association is a voluntary health agency dedicated to aiding victims of Alzheimer's Disease and their families through a program of research, patient and family services, education and advocacy. The local chapter serves nearly 33,000 affected families in the greater St. Louis metropolitan area and eastern Missouri.



Dennis Loh, M.D., (center) principal investigator of the immune cell development study, conducted the work with (from left) Rodney Newberry, second year medical student; Chris Nelson, laboratory technician; William Sha, MSTP student; John Russell, Ph.D., associate professor of pharmacology; and David Kranz (not pictured) of the University of Illinois.

Transgenic mice help solve immune system mysteries

Researchers at the School of Medicine have made a milestone contribution to understanding the origin and fundamental biological basis of autoimmune disease and tissue rejection. Their discovery, documented in an article recently published in the British journal *Nature*, explains more fully than ever before how the body's immune system cells are bestowed with the ability to distinguish foreign tissue.

In experiments using gene purification and cloning technology and "transgenic" mice, the researchers created a new mouse species with an immune system genetically programmed to attack its own tissue. The genetic alteration created a mouse with some immune system cells — specifically its T-cells — that should treat host tissue as though it were foreign tissue. The reasonable prediction was that such a mouse would have died early in its development as its genetically altered T-cells launched a massive autoimmune response.

Instead, the mouse's thymus gland — where T-cells mature and are programmed for their specific functions — employed what proved to be a two-stage process to snuff out the self-reactive T-cells before they had a chance to emerge and circulate throughout the mouse.

Elucidation of the dual process of "educating" T-cells in the thymus gland provides immunologists with a way to experimentally approach details of immune system development that have lain outside their grasp until now. The failure of one of these educational or screening processes in the thymus gland is a likely explanation for the existence of autoimmune diseases such as rheumatoid arthritis and some forms of diabetes.

"This (discovery) is fundamental to understanding transplantation, autoimmune disease, and to combatting infectious organisms — relevant to many problems in medicine," explained principal investigator Dennis Loh, M.D., an associate professor of

medicine and an associate investigator at the University's Howard Hughes Medical Institute.

The Washington University team has been involved in research in this area for five years. Like many other immunology groups, they have labored to develop an effective experimental approach to solving the field's greatest paradox: reconciling two long-held basic tenets of immunology, is major histocompatibility (MHC) restriction and self-tolerance.

MHC restriction, first demonstrated 15 years ago, refers to the scientific term for the experimental observation that the body's T-cells will attack an infected cell only if that cell is of the same host organism; T-cells are "restricted" to attack only cells whose MHC label is the same as their own. T-cells therefore have the ability to recognize and react with "self". Their function, in fact, is inseparably linked to that ability.

The paradox exists in the fact that at the same time T-cells exhibit MHC restriction, they also demonstrate self-tolerance; that is they must tolerate the presence of cells of their same genetic identity, otherwise autoimmune responses would be the norm rather than the exception. Self-tolerance is the reason why people do not reject their own kidneys, or can have their bone marrow removed during chemotherapy and replaced later without rejection.

"This article in *Nature*, and another that we published just before it, clarify how MHC restriction and self-tolerance arises," said Loh. "The only cells that emerge from the thymus are those that recognize their own MHC label but — and this is the important part — recognize it only a little bit. In the thymus there exists both negative selection and positive selection. If a developing T-cell reacts or recognizes its own MHC label too strongly, it is deleted. But if it does not recognize its own MHC label a little bit it is, through a process called positive selection, also not allowed to emerge from the

thymus. So it is a fine combination of these two processes, negative and positive selection, that allows T-cells to exhibit both MHC restriction and self-tolerance."

The findings of Loh and his co-workers William Sha, Christopher Nelson, Rodney Newberry, in collaboration with John Russell of the Department of Pharmacology and David Kranz (University of Illinois) portray in detail the thymus' role as a dual-action filter for T-cells. In the transgenic mice prepared in Loh's study, thymus glands ballooned to several times their normal size. Inspection showed that they retained the T-cells genetically altered to be too reactive to their own MHC label, as well as the T-cells that were not at all reactive to their own MHC label. "Simply put," said Loh, "it seemed to be a matter of degree."

In consideration of these new findings, Loh postulates that we might all start out early in development with a variety of T-cell types that are reactive or unreactive in the extreme, and are therefore selected against for survival. Although each organism may begin with the whole universe of possible T-cell MHC labels, only the appropriate ones survive screening in the thymus. In this feature reside the most potent clinical implications of the research team's recent findings.

"If this deletion mechanism is 99.99 percent perfect, we are probably normal," guesses Loh. "But what if under some circumstances we don't understand, one percent of cells that are too self-reactive leak out of the thymus? This is one potential explanation of autoimmune diseases such as diabetes, lupus and rheumatoid arthritis. There's no formal proof of this yet, but at least now we have a working model in which it can be experimentally tested." Likewise, Loh feels that experimental manipulation of T-cell screening may someday lead to new ways to make the body better able to tolerate foreign tissue, thus facilitating tissue transplantation.

MEDICAL RECORD

Stoker takes reins as Central Institute director

Richard G. Stoker, Ph.D., is the new director at Central Institute for the Deaf (CID) at Washington University Medical Center.

Stoker had been an associate professor of audiology at McGill University in Montreal. He is the first person born deaf to head a major scientific and educational institution in this country. CID was founded in 1914 to teach deaf children to talk, to prepare teachers, clinicians and research scientists who deal with the deaf, and to pursue research beneficial to those with hearing disorders.

Stoker, whose appointment was effective Jan. 1, is the fourth director of CID. He replaces Donald R. Calvert, Ph.D., who has directed CID for 16 years. Calvert is returning to his home state, California, to lecture and write.

"There is no finer institution involved in the provision of services to hearing-impaired individuals than Central Institute for the Deaf," says Stoker. "My roots are tied to Central Institute. As a profoundly deaf child, one of my first teachers was trained at

CID. Through her dedicated efforts and those of my parents, I feel the early foundations were laid to enable me to achieve many things that otherwise would not have been possible. In coming to CID I feel that I am, in effect, repaying a debt of gratitude for that good teacher and for the world of knowledge and accomplishment that has become my treasure."

Stoker's appointment was endorsed by William H. Danforth, M.D., chancellor of Washington University, in keeping with an affiliation between CID and the University that began in 1931. Stoker is also chairman of the Department of Speech and Hearing.

Prior to his appointment at CID, Stoker was director of the oral rehabilitation and education division at McGill's School of Human Communication Disorders. His research interests include auditory-visual perception of speech by hearing-impaired individuals; speech and language development of hearing-impaired children; and implementation of technology for the benefit of the hearing impaired.

He joined the faculty at McGill in 1986, coming from Pennsylvania State University, where he had been an assistant professor of audiology for five years. Stoker also has taught at Montreal Oral School for the Deaf and at the University of Alabama. He has worked as a research associate at Bell Northern Research Laboratories, and as a consultant to Bell Canada on the development of telephone devices for disabled customers.

Stoker received his doctorate from the School of Human Communication Disorders at McGill in 1980. He is a member of many professional societies, including the Registry of Interpreters for the Deaf, and is on the executive board of Communicaide for Hearing-Impaired Persons.

He served on the Alexander Graham Bell Association's children's rights committee from 1976-82, and on the executive board of the Council on Education of the Deaf from 1982-84.



Richard G. Stoker

He has been a member of the board of directors for the Montreal Oral School for the Deaf, and is editor-in-chief of the *Volta Review*, one of the most widely recognized professional journals on deafness.

Klahr new president of kidney foundation

Saulo Klahr, M.D., Joseph Friedman Professor of Renal Diseases in Medicine and director of the renal division at the School of Medicine, has been elected president of the National Kidney Foundation.

The National Kidney Foundation, a volunteer organization founded in 1950, is dedicated to research, public and professional education, and programs for patients with renal disease. In 1988, the foundation contributed more than \$10 million to kidney research, professional and public education.

As president of the foundation, Klahr will be responsible for determining its role and policies in scientific and health matters including end-stage renal disease, dialysis and renal

transplantation. He will also chair the committee that oversees the foundation's endowment research fund.

Klahr's research interests include urinary tract obstruction, renal metabolism and physiology, chronic renal disease, and parathyroid hormone metabolism. He joined the faculty in 1963 as an instructor in medicine, and became professor of medicine and director of the renal division in 1972.

He has held appointments with several government agencies and voluntary organizations, including the presidencies of the American Society of Nephrology and the American Society of Renal Biochemistry and Metabolism.

Memory/aging studies need volunteers

A study involving memory changes in very old people and another study of the link between Parkinson's and Alzheimer's Diseases are among several new projects for which volunteers are needed by researchers at the School of Medicine.

These and other studies are being conducted by the Memory and Aging Project, which sponsors long-term research on intellectual function in older adults. One of the program's most important research activities is studying the brain, comparing the effects of healthy aging to those of Alzheimer's Disease and other neurological disorders. The Memory and Aging Project has received a \$4 million, five-year renewal of funding from the National Institute on Aging to continue its work, which began in 1979.

A variety of participants are needed. People aged 80 and older, whether intellectually healthy or with dementia, can volunteer for the new project that examines healthy aging and Alzheimer's in the very old. Parkinson's Disease patients who are 60 or older are needed for an investigation of the relationship between Parkinson's and Alzheimer's. A study of depression and dementia seeks participants between the ages of 65 and 80 who are in good physical health but depressed, or depressed and also have mild dementia.

For other investigations, the Memory and Aging Project needs volunteers aged 65 and older who have mild dementia and people of any

age who have memory loss due to stroke, but no paralysis. A few people will be needed for an ongoing clinical trial of the experimental drug THA; for that study, patients must have mild to moderate Alzheimer's dementia but otherwise be in excellent health. The project also seeks participants aged 65 and older, healthy or demented, with an eighth grade education or less, and people of any age who have progressive aphasia, that is, an increasing difficulty with language — whether in speaking, writing or comprehension — without any memory problem or paralysis.

Because of the long-term nature of the research, there is a need for volunteers who are committed to the program, emphasizes Leonard Berg, M.D., director of the Memory and Aging Project. Time commitment will vary, but generally there is a two- to three-hour session at enrollment, two or three initial visits and two or three later visits each year.

All sessions are free and conducted on an outpatient basis. Participants will be interviewed by doctors and nurses and given simple memory tests. They will receive an evaluation of their neurological health and a diagnosis if there is memory impairment; reports of study results will be sent to their personal physicians if requested by participants.

For more information or to volunteer, call the Memory and Aging Project at 362-2683 between 8:30 a.m. and 4:30 p.m., Monday through Friday.

Ackers named first Wittcoff professor

Gary K. Ackers, Ph.D., has been appointed as the first Raymond H. Wittcoff Professor and as head of the Department of Biochemistry and Molecular Biophysics at the School of Medicine.

The appointment, effective July 1, 1989, was announced by William H. Danforth, M.D., chancellor of Washington University. Ackers, a molecular biophysicist, is currently on the faculty at Johns Hopkins University in Baltimore. He replaces Carl Frieden, Ph.D., professor of biological chemistry, who has been acting as interim head of the department.

The Wittcoff professorship has been established by St. Louis businessman Raymond H. Wittcoff, president of the Transurban Corporation. Wittcoff is chairman of the Washington University Medical Center board and a trustee of the University. He is also a member of the board of directors of Jewish Hospital, a sponsoring institution of the medical center.

"The selection of Dr. Ackers as the first Wittcoff professor is an excellent one," says Danforth. "For many years Mr. Wittcoff has been, in the truest sense, an advocate of Washington University. His close ties with the School of Medicine and the medical center have led him to establish this chair in the Department of Biological Chemistry and Molecular Biophysics, which has a distinguished history. We are very pleased that Dr. Ackers, one of the most innovative researchers in the promising field of macromolecular

assemblies, will be leading the department."

At Johns Hopkins, Ackers has been professor of biology and biophysics and acting director of the Institute for Biophysical Research on Macromolecular Assemblies. Macromolecular assemblies are complex, organized systems of large molecules such as RNA and DNA that are central to life processes. Because understanding how these systems interact is essential to fields such as biotechnology and genetic engineering, the study of macromolecular assemblies is considered one of the most exciting areas in basic biological research.

Ackers is particularly interested in the biophysics of protein-DNA interactions and in hemoglobin, a blood protein responsible for transporting oxygen and carbon dioxide and one of thousands of proteins that work in macromolecular assemblies. Because the study of macromolecular assemblies has important implications for molecular engineering, such research could, for example, one day help scientists produce artificial blood products, a development that could eradicate current problems with supply and contamination.

Ackers is a recipient of the National Institute of Health's MERIT award, which provides long-term financial support to selected researchers in recognition of their superior achievement and consistent commitment to excellence.

Heuckeroth receives Cori award

Robert O. Heuckeroth, a student in the M.D./Ph.D program at the School of Medicine, has been named the 1988 recipient of the Gerty T. Cori Predoctoral Fellowship and Prize.

The award, established by Sigma Chemical Company in 1984 in honor of the late Gerty T. Cori, provides support for either a M.D./Ph.D. or a Ph.D. candidate in biochemistry who has displayed outstanding research abilities in carrying out his or her thesis project.

Heuckeroth's research focuses on protein targeting, the process by which proteins get to where they need to go in cells. He is working with the enzyme NMT, which links a fatty acid called myristic acid to viral and cellular proteins. In some cases, myristic acid attachment has been demonstrated to be crucial for viral assembly or intracellular protein targeting. Heuckeroth

has developed a series of fatty acid analogs, compounds that differ slightly in their structure from myristic acid yet are still recognized by NMT and attached to myristoyl proteins.

He is now administering the analogs to cells in an attempt to "fool" NMT into transferring them, in place of myristic acid, onto myristoyl proteins. He hopes that the addition of these analogs will alter the properties of these proteins, and affect virus assembly or protein targeting.

Heuckeroth works in the lab of Jeffrey I. Gordon, M.D., professor of biochemistry and medicine at the School of Medicine.

The Cori Award provides a stipend as well as a monetary prize so that the recipient may attend a scientific meeting or buy books or other academic materials.

PERSONNEL NEWS

Tips on selecting a TIAA-CREF beneficiary

The purpose of your TIAA-CREF annuity, of course, is to provide lifetime income when you retire. If you should die before you begin income, your TIAA-CREF accumulation becomes available to your beneficiary — just as the proceeds from a TIAA individual or group life insurance policy would be available to your beneficiary.

Therefore, whenever your family circumstances change, be sure to review your beneficiary designation so that your annuity accumulation or your life insurance proceeds go where you want them to.

A beneficiary can be one or more individuals or an institution, trustee, or estate. We ask you to name a "primary" beneficiary to receive the benefits if you die. We also ask for a "contingent" beneficiary, to whom the benefits would go if no primary beneficiary is living. (If none of the beneficiaries are living, the proceeds go to your estate.) You can easily verify who your beneficiary is by writing to TIAA. Or you may change your primary or contingent beneficiary by writing to TIAA for the appropriate form(s).

TIAA will be glad to help you with your beneficiary choice. Here are some pointers, based on the experience of TIAA annuity and insurance beneficiary change unit.

Stating "my children" is a simple way to name all your children as your beneficiaries. This provides equal treatment among your present and future children born of any marriages, including adopted children. (Stepchildren and non-adopted children living with you are excluded, unless you specifically state otherwise.)

Where a beneficiary designation includes more than one person, the benefits are divided equally among the living beneficiaries of that class (primary or contingent). So if you want some other arrangement, you should specify otherwise.

Some people list both their estate and the name of a specific executor as beneficiaries. However, it's suggested you list only your estate as beneficiary in the event the executor has changed at the time of your death.

Provide TIAA with the full name of the beneficiary — "Mrs. Mary Smith" rather than "Mrs. Smith" or "Mrs. John Smith." This helps prevent ambiguity in the case of a divorce and a remarriage, for example.

To make a beneficiary designation effective, please supply TIAA with the beneficiary's date of birth and relationship to you. We need one or the other in order to ensure that payment is made to the proper person. A Social Security number also helps us to find a current address if we don't have one.

You also may include requirements along with the beneficiary designation — stipulating that the death benefits be paid as income rather than a single sum, for example. Tell TIAA in writing what you want to accomplish and they'll send you a special form.

A special form also is required if you wish to make your beneficiary designation irrevocable. Even with an "irrevocable" designation you can change your mind later — but you would then have to get all your current beneficiaries to agree to the change.

There's another point to keep in mind where annuity beneficiaries are concerned. If you're married, there are federal requirements for your beneficiary designation that may affect you. These requirements apply to benefits arising from retirement or Tax-Deferred Annuity plans in which you participated after Aug. 23, 1984, at an

institution whose plan is subject to ERISA. This generally includes plans of private but not public institutions.

For these policyholders, federal law entitles your spouse to 50 percent of any pre-retirement death benefits regardless of whom you have designated as beneficiary, unless your

spouse has waived those rights in writing. If you have questions, please give TIAA a call at 1-800-842-2733.

And one last point, which applies both to annuity and insurance beneficiaries: You can guard against complications by keeping your beneficiary designation as simple as possible.

U.S. savings bonds information

Following are answers to some of the most commonly asked questions about U.S. savings bonds:

What is the market-based interest formula for savings bonds?

The market-based rate formula sets interest yields on Series EE and outstanding Series E Bonds (issued after October 1947) and U.S. Savings Notes (Freedom Shares) held five years or longer after November 1982. Market-based rates are set semiannually, in May and November, and bonds held five years or longer receive the average of semiannual rates, rounded to the nearest quarter percent and compounded semiannually, in effect during the holding period.

For bonds issued since Nov. 1, 1986, and held five years or longer, there is a minimum rate of 6 percent; these bonds reach maturity in 12 years — the time it takes the bond to reach face value at the minimum rate.

How is the market-based rate set?

Each May 1 and Nov. 1, the Treasury computes the average daily market yield on five-year Treasury marketable securities during the preceding six months. The savings bonds rate is set at 85 percent of the market average. At the end of five years, the average of the 10 semiannual rates, rounded to the nearest quarter percent and compounded on a semiannual basis, determines a bond's five-year yield. If a bond is held for six years, 12 semiannual rates are averaged, and so on. Bonds held less than five years earn interest on a fixed, graduated scale.

I hold bonds purchased before November 1986. Do they now get the 6 percent minimum rate?

In most cases, no. All bonds with minimum rates higher than 6 percent continue to receive those rates as their minimum to the end of the maturity period in effect Nov. 1, 1986. As bonds

enter new extension periods, they will begin to receive the new minimum. Under current market conditions, persons holding bonds with higher guaranteed rates have every incentive to retain them.

Is there a limit on the amount of savings bonds a person may buy?

Yes. The annual limit on the amount of Series EE Bonds an individual may buy is \$15,000, issue price (\$30,000, face amount). This limit applies to the amount of bonds that may be purchased in the name of any one person in any one calendar year; it has no effect on cumulative holdings.

Purchasing bonds in co-ownership form can effectively double the limit, assuming the co-owner has purchased no other bonds. There is no limit on the amount of HH Bonds that may be issued in exchange for Series E and EE Bonds and Savings Notes, or purchased with the redemptive proceeds of matured Series H Bonds.

What is the best way to buy bonds?

The simplest, most convenient way to purchase bonds is through the payroll savings plan. Through the plan, an employee can arrange to set aside a certain amount of money each payday to buy savings bonds. Savings bonds also may be purchased for cash at most commercial banks and many savings institutions nationwide.

Where can I get more information on savings bonds?

Current rate information can be obtained toll-free by calling 1-800-US Bonds. Other information can be obtained from many financial institutions, Federal Reserve Banks and Branches, and Savings Bonds Division District offices.

Information on replacing lost or stolen bonds, or reissuing existing securities, can be obtained by writing to the Bureau of the Public Debt, Parkersburg, WV 26106-1328.

New tax law affects employee benefits

In late October a technical corrections act to the Tax Reform Act of 1986 was passed and several provisions that affect employee benefits were modified. Two of these changes are briefly summarized below.

SRA Withdrawals — an extension. Currently, owners of cashable "403(b)" annuities, like TIAA and CREF Supplemental Retirement Annuities, may make cash withdrawals at any time. Withdrawals are taxable income and subject to an additional tax equal to 10 percent of the withdrawn amount except in certain circumstances. The new provisions specify that this unrestricted right of withdrawal will apply after 1988 only to the dollar amount of accumulations in these annuities as of the end of 1988. (You may hear this described as "grandfathering pre-1989 accumulations.")

"Elective Deferrals" — a clarification. Under an employer's Retirement or Tax-Deferred Annuity (TDA) plan, current law permits an employee to agree to reduce his or her salary and have the employer contribute the funds on a before-tax basis to a "403(b)" annuity. The Tax Reform Act

put a \$9,500 limit on the annual amount of such salary reduction contributions — and also required that all contributions made by salary reduction, including those made in connection with mandatory participation in the employer's retirement plan using 403(b) annuities, count toward the \$9,500 limit.

The new law has changed this. If the salary reduction contribution is made as a result of a one-time irrevocable election to participate in the retirement plan at the time of initial eligibility (or under similar arrangements to be specified in Treasury regulations), such contributions don't count toward the \$9,500 limit.

The new law continues to count Tax-Deferred Annuity plan contributions toward the \$9,500 limit. It continues to count toward the limit voluntary salary-reduction contributions to the retirement plan. And it also may include salary-reduction contributions to a retirement plan that mandates participation, but offers employees a choice between salary-reduction (before-tax) and salary-deduction (after-tax) routes.

University applauds employees' service to the community

The Washington University community has been busy during the holiday season spreading good cheer throughout the St. Louis area.

—Last month, the University community contributed \$1,945 to the 100 Neediest Cases fund-raising campaign. This holiday season campaign for the needy in St. Louis is sponsored by the Post-Dispatch and United Way.

Contributing schools and departments were: Office of Financial Planning, Personnel/Faculty Records, Anthropology, University College, Summer School, School of Dental Medicine, Asset Records, Health Service, Engineering Student Services and Three-Two Engineering, Engineering Cooperative Education Program, Data Processing Services, Sociology, Chemistry, School of Business, Controller's Office and International Office.

—The Department of Microbiology in the School of Medicine constructed, decorated and filled 200 stockings for distribution at the St. Louis Regional Center Clinic.

—The Alumni and Development Office contributed to "Feed My People," a food pantry and agency.

TIAA-CREF introduces retirement option

Effective Jan. 1, 1989, Teachers Insurance and Annuity Association College Retirement Equities Fund introduced a new Interest Payment Retirement Option (IPRO) to provide policyholders with increased flexibility in receiving income benefits from their TIAA Retirement Annuity accumulations.

By electing IPRO, TIAA policyholders starting retirement benefits on or after age 55 will be able to receive interest income payments each month from their TIAA annuities, while leaving their principal intact and postponing final retirement decisions about starting full lifetime annuity income. Federal law requires that lifetime annuity income benefits generally must begin by age 70-1/2.

IPRO is a unique retirement plan benefit that is the result of a favorable letter-ruling to TIAA-CREF from the Internal Revenue Service. It is a TIAA-only option and is not available for benefit payments from CREF accumulations.

Child care benefit

The first contribution for employees enrolled in the Child Care Benefit will be Jan. 31, 1989. Claims for reimbursement may be filed shortly after the first of the month. Claim forms are available at both the Hilltop and Medical campus Personnel Offices.

The minimum reimbursement is \$25. Expenses will not be paid in full if sufficient funds are not available; payment will be made as additional funds accrue.

The qualifying age for children has been reduced from 15 to 13 years.

Personnel News

Personnel News appears monthly in the Record and is prepared by Gloria W. White, vice chancellor for personnel and affirmative action, and other members of the Personnel Office. Personnel News is designed to keep Washington University employees and their families informed of the benefits and opportunities available at the University.

CALENDAR

Jan. 26-Feb. 4

LECTURES

Thursday, Jan. 26

2:30 p.m. Dept. of Mechanical Engineering Colloquium, "Modern Numerical Methods for Solving Ordinary Differential Equations," David K. Kahaner, technical group leader, Scientific Computing Division, U.S. Dept. of Commerce, National Institute of Standards and Technology, 100 Cupples II.

4 p.m. Assembly Series and Asian Student Association Lecture, Madame Nien Cheng, author of *Life and Death in Shanghai*, will discuss her experiences as a survivor of the Cultural Revolution. Graham Chapel.

4 p.m. Dept. of Music Lecture with Nicholas McGegan, music director, Philharmonia Baroque Orchestra of San Francisco. Blewett B-8.

4 p.m. Dept. of Chemistry Seminar, "N-15 Solid State NMR of the Gramicidin-A Channel," Tim Cross, prof., Dept. of Chemistry, Florida State U. 311 McMillen.

4 p.m. Dept. of Earth and Planetary Sciences Colloquium, "Origin of Mississippi Valley Type Deposits," Dimitri Sverjensky, assoc. prof., Dept. of Earth and Planetary Sciences, Johns Hopkins U. 102 Wilson.

4 p.m. Divisional Plant Biology Program, "Biological Roles of HSPs in Higher Plants," Elizabeth Vierling, Dept. of Biochemistry, U. of Arizona. 309 Rebstock.

4 p.m. Dept. of Pathology Seminar, "Fibronectin Structure and Function," John A. McDonald, WU Dept. of Medicine. 3rd floor Aud., Children's Hospital.

4:10 p.m. Dept. of Philosophy 7th Annual Herbert Spiegelberg Lecture in Phenomenology, "Merleau-Ponty's Thesis of the Primacy of Perception and the Meaning of Scientific Objectivity," John Compton, prof. of philosophy, Vanderbilt U. Hurst Lounge, Duncker Hall.

Friday, Jan. 27

Noon. Dept. of Cell Biology and Physiology Seminar, "Molecular Dissection of the Lysosomal Enzyme Targeting Pathway," Stuart Kornfeld, WU Div. of Hematology. 4914 S. Bldg.

Noon. Left Forum, "The American Penal System: What Does the Revolving Door Mean?" Richard Sindel, criminal lawyer. Sponsored by Democratic Socialists of America, WU Local. 303 Mallinckrodt, Lambert Lounge.

8 p.m. Gallery of Art Opening Reception and Lecture for "Eliot Porter," a retrospective of the photographer's 50-year career (through March 26). Martha Sandweiss, adjunct curator of photographs, Amon Carter Museum, Fort Worth, will present a curatorial perspective on the photo exhibition. Steinberg Hall Aud. For more info., call 889-5490.

Saturday, Jan. 28

9 a.m. Saturday Morning Neural Sciences Seminar, "Current Concepts of Transmitter Action: How It All Works (Nicotinic ACh)," Joe Henry Steinbach, WU Dept. of Anesthesiology. Medical Science Bldg., Cori Aud.

Sunday, Jan. 29

7 p.m. Democratic Socialists of America, WU Local, Lecture, "Strategies for Combatting Homelessness in St. Louis," Jerald J. Kleba, pastor, St. Bridget's Catholic Church. 309 Rebstock.

Monday, Jan. 30

2 p.m. Dept. of Chemical Engineering Seminar, "Molecular Dynamics of Macromolecules Anchored to a Solid Surface," Richard Parnus, U. of California, Los Angeles. 100 Cupples II.

Tuesday, Jan. 31

4:5:30 p.m. Dept. of Chemistry Teaching Seminar, "A General Introduction to Mass Spectrometry," Andrew Tyler, asst. prof., Dept. of Internal Medicine, WU School of Medicine. 311 McMillen.

8 p.m. Dept. of Art History and Archaeology Lecture, "The Earliest Seals from the Near East and Their Meaning," Edith Porada, prof. emerita, Columbia U. Steinberg Aud.

Wednesday, Feb. 1

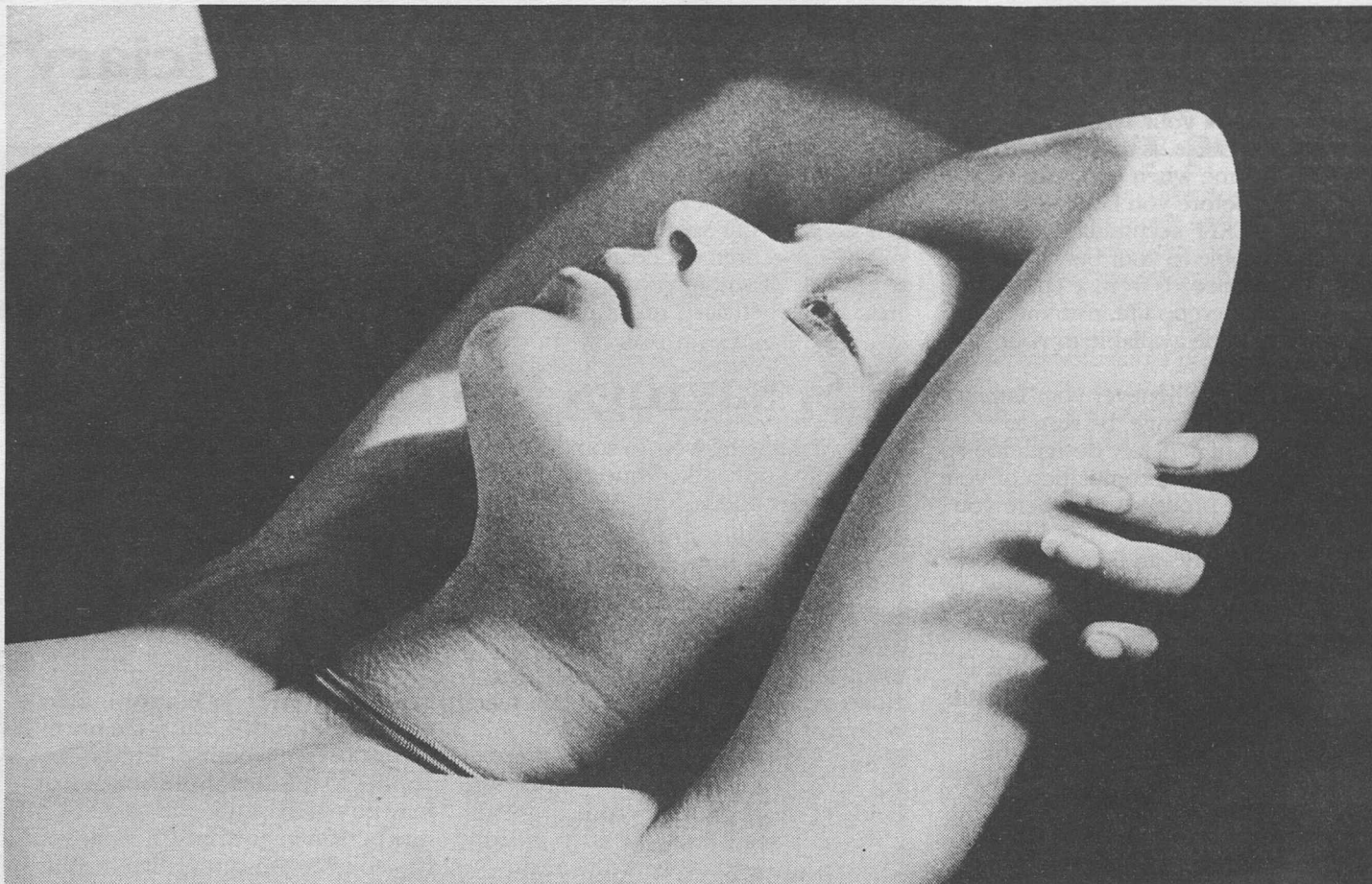
11 a.m. Assembly Series CIRCUIT Lecture, John L. May, Archbishop of the Archdiocese of St. Louis. Graham Chapel.

11 a.m. Phi Alpha Delta Lecture, "A Legal Education: An Open Sesame," Fred L. Kuhlmann, vice chairman of the board, Anheuser-Busch Cos. Inc. and WU alumnus. Co-sponsored by School of Law. 316 Mudd Law Bldg.

4 p.m. Physics Dept. Colloquium, "Quantum State of the Cosmos," Donald Page, prof., Penn State U. 204 Crow.

Thursday, Feb. 2

4 p.m. Dept. of Earth and Planetary Sciences Colloquium, "Microplate Models for Spreading Center Reorganizations," Joseph Engeln, asst. prof., Dept. of Geology, U. of Missouri at Columbia. 102 Wilson.



The human form: "White Nude — Arms Over Head," a 1974 work by American photographer Ralph Gibson, is one of a wide range of photographs depicting images of the body included in "It Figures: The Human Form Photographed," a Gallery of Art exhibit on display through March 19 in the lower gallery. Exhibit hours are 10 a.m. to 5 p.m. weekdays; 1 to 5 p.m. weekends. For more information, call 889-4523.

4 p.m. Anthropology Colloquium Series, "Soils Versus Sediment: The Confusing Role of Organic Matter," Julie Stein, U. of Washington, Seattle. 101 McMillan.

Saturday, Feb. 4

11 a.m.-12:30 p.m. University College Saturday Seminar, "Intellectual Antecedents of the French Revolution," James F. Jones Jr., WU prof. and chairman, Dept. of Romance Languages and Literatures. Women's Bldg. Lounge.

MUSIC

Saturday, Jan. 28

11:30 a.m. Dept. of Music and Plaza Frontenac Present a Pops Concert featuring the WU Wind Ensemble, directed by Dan Presgrave, and Robert Coleman, St. Louis Symphony saxophone soloist. Plaza Frontenac, lower level near Neiman-Marcus. For info., call 889-5574.

1-3 p.m. Dept. of Music and St. Louis Classical Guitar Society Present a Master Class, featuring Paul O'Dette and Hopkinson Smith on lute. Blewett B-8. General admission is \$6. Free to faculty, staff and students, and St. Louis Classical Guitar Society members. For more info., call 889-5574.

EXHIBITIONS

"Washington University Permanent Collection." Through June 30. Gallery of Art, Steinberg Hall, lower gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Eliot Porter," a retrospective of the photographer's 50-year career. Jan. 27-March 26. Gallery of Art, Steinberg Hall, upper gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"It Figures: The Human Form Photographed." Through March 19. Gallery of Art, Steinberg Hall, lower gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Read It Again! An Exhibit of Books From the Children's Literature Collection," donated by Henrietta Maizner Hochschild. Through April 28. Olin Library, Special Collections (fifth floor). 8:30 a.m.-5 p.m. weekdays. For more info., call 889-5495.

FILMS

Thursday, Jan. 26

7 and 9:30 p.m. Filmboard Series, "Sambizanga." \$2. Brown Hall.

Friday, Jan. 27

7 and 9:30 p.m. Filmboard Series, "A World Apart." \$2. Brown Hall. (Also Sat., Jan. 28, same times, and Sun., Jan. 29, at 7 p.m., Brown.)

Midnight. Filmboard Series, "From Russia

With Love." \$2. Brown Hall. (Also Sat., Jan. 28, same time, and Sun., Jan. 29, at 9:30 p.m., Brown.) On Fri. and Sat., both the 9:30 p.m. and midnight films can be seen for a double feature price of \$3; both Sun. films can be seen for \$3.

Monday, Jan. 30

7 and 9:30 p.m. Filmboard Series, "A Funny Thing Happened on the Way to the Forum." \$2. Brown Hall. (Also Tues., Jan. 31, same times, Brown.)

Wednesday, Feb. 1

7 and 9:30 p.m. Filmboard Series, "Death in Venice." \$2. Brown Hall. (Also Thurs., Feb. 2, same times, Brown.)

Friday, Feb. 3

7 and 9:30 p.m. Filmboard Series, "Midnight Run." \$2. Brown Hall. (Also Sat., Feb. 4, same times, and Sun., Feb. 5, at 7 p.m., Brown.)

Midnight. Filmboard Series, "Colors." \$2. Brown Hall. (Also Sat., Feb. 4, same time, and Sun., Feb. 5, at 9:30 p.m.) On Fri. and Sat., both the 9:30 p.m. and midnight films can be seen for a double feature price of \$3; both Sun. films can be seen for \$3.

SPORTS

Friday, Jan. 27

6 p.m. Swimming and Diving, WU Invitational. Millstone Pool. (Also Sat., Jan. 28, at 11 a.m.)

Friday, Feb. 3

5:30 p.m. Women's Basketball, WU vs. U. of Rochester. Field House.

7:30 p.m. Men's Basketball, WU vs. U. of Rochester. Field House.

MISCELLANY

Friday, Jan. 27

4:15-5:45 p.m. Performing Arts Department Advanced Masterclass in Michio Ito Technique. Free to WU students; \$5 for faculty and staff. 207 Mallinckrodt.

Sunday, Jan. 29

6:30 p.m. Democratic Socialists of America, WU Local, Business Meeting. 309 Rebstock.

Monday, Jan. 30

11 a.m.-12:30 p.m. University College Short Course, "Five Women Artists: Their Art and Their Achievement." Five Mondays, Jan. 30-March 6. (No class Feb. 20.) \$75. Call 889-6788 to register.

7:30-9:30 p.m. University College Short Course, "From Page to Stage: Shakespeare's *Midsummer Night's Dream*." Three Mondays, Jan. 30-Feb. 13. \$45. Call 889-6788 to register.

Children's dance classes offered

Washington University will conduct a children's program in creative dance and movement this spring. The sessions will be conducted by artist-in-residence Christine Graham, who is a full-time faculty member in the Performing Arts Department. Graham has a master's degree in modern dance and a bachelor's in ballet from Indiana University.

"This creative dance and movement program consists of a series of classes designed to present young people with challenges and stimulation in the movement mode. The goals of the class will be to improve physical coordination, strength, creativity, musicality and imagination," says Graham.

Classes are held every Saturday and the children will be divided according to age: "Bumblebees," children ages 2-3, will meet from 10-10:45 a.m.; "Butterflies," children ages 4-5, will meet from 9-9:45 a.m.; and "Cardinals," children ages 6-8, will meet from 11-11:45 a.m.

The spring session began Jan. 21, but enrollment is still open. Cost of the entire session, which runs through April 8, is \$70. The cost will be prorated for those joining after Jan. 21. All classes will be held in Mallinckrodt dance studio.

For information, call 889-5858.

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Louis in 1980. Prior to that he served as bishop of the Diocese of Mobile and as auxiliary bishop of Chicago.

CIRCUIT, the Council of Interreligious Concerns, is a student group that aims to promote discussion on issues relating to religion, faith and ethical values.

Calendar Deadline

The deadline to submit items for Feb. 9-18 calendar of the Washington University Record is Jan. 27. 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 Jill Weber, calendar editor, Box 1070, or by electronic mail to p72245KM at WUVMC.