Space-age science reveals ancient rift across Midwest

Research using computer techniques developed to analyze data from Mars and Venus has revealed an ancient rift extending from just south of Omaha, Neb., to the Missouri bootheel. Called the Missouri Gravity Low by its discoverers, Raymond E. Arvidson, WU associate professor of earth and planetary sciences, and Edward A. Guinness, Jr., WU research associate in earth and planetary sciences, the subterranean rift is also aligned with the Lewis and Clark Fracture Zone in the Northern Rockies, and with the sharp southern edge of the Appalachians.

Long inactive, the rift may, nonetheless, be a physical legacy, like the Appalachian Mountains, of a collision of two land masses more than 200 million years ago, or an ancient scar tracing the earth’s rotation over a once “hot spot” deep within the earth.

The discovery, Arvidson said, could provide a better understanding of the earth’s crust and the forces responsible for the many earthquakes that have shaken the Mississippi River Valley in Missouri, Tennessee and Kentucky. The Missouri Gravity Low intersects the active fault south of New Madrid, Mo., the epicenter for an 1811 quake so massive that it altered the course of the Mississippi River and presently the site of numerous small earthquakes.

Arvidson and Guinness discovered the rift while studying a “simplified spaceview” of Missouri’s surface for an entirely different purpose — to locate concentrations of ore as part of a study sponsored by the National Aeronautics and Space Administration. Some 600,000 gravitational measurements of the region were fed into a computer, which produced a color map showing the variations in the gravity field of the area. This technique and others were developed to analyze data and photo-

WU receives $45 million challenge grant from Danforth Foundation

Receipt of a challenge grant of $45 million by Washington University from the Danforth Foundation of St. Louis was announced today by George H. Capps, president, Capitol Coal & Coke Co., chairman of the University’s Board of Trustees.

“This exceptional benefaction comes at a strategic time in the life of Washington University,” Capps said.

“The University has been engaged in an intensive self-study for the past several years. This study reveals that our opportunities for service as a great teaching and research center are enormous. The financial requirements for strengthening the University and realizing these opportunities are proportionately great. Clearly, the response to these needs will entail designing the largest fund-raising program in Washington University’s history. The Danforth Foundation’s magnificent participation at this time is tremendously encouraging to all of us who have been engaged in the planning process. Now the Trustees and the entire University family must go to work to address those urgent needs that remain.”

In announcing its endowment grant to the University, the Foundation stated that the $45 million will be awarded over a five-year period for the following purposes:

For support of academic programs in Arts and Sciences and the Schools of Architecture and Fine Arts, including the capital needs of the Department of Psychology — $13,500,000; for student services (including support of new athletic facilities) — $4,500,000; for the Medical School’s new Clinical Sciences Research Building — $5,000,000; for support of biological, biomedical and medical sciences — $10,000,000; for the School of Business — $5,000,000; for the Olin Library to support automation — $4,000,000; for the School of Engineering and Applied Science — $3,000,000.

The Danforth Foundation grant will speed the realization of some of the Commission’s key recommendations,” Griffin said. “It is a splendid complement to the 270 distinguished community and national leaders who have devoted so much of their time over the past 28 months to the program of the Commission. The Foundation’s grant will have a significant impact on the ability of the University to contribute in the solution of critical questions confronting our society and, indeed, mankind, which has been the ultimate concern of the Commission and its members.

Chaired by the individual task forces which carried out the Commission’s study were: John R. Barsanti, Jr., Student Life Task Force; John W. Hanley, chairman and president, Monsanto Co., Medical Task Force; James Lee Johnson, Jr., vice president, Stifel, Nicolaus & Co., Inc., Social Work Task Force; George E. Kastubaum, president, HOK Inc., Architect, Fine Arts, Gallery of Art Task Force; Charles F. Knight, chairman and chief executive officer, Emerson Electric Co., Business Task Force; David S. Lewit, chairman and chief executive officer, General Dynamics Corp., Engineering Task Force; J. E. Millstone, president, Millstone Construction Inc., Dental

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WU makes second joint purchase of lab equipment with UMSL

The University of Missouri-St. Louis (UMSL) and WU have jointly purchased an X-ray diffractometer that will be housed at UMSL. The instrument, used in determining crystal structures, is the second major purchase the two institutions have made together in the last three years. In May 1978 the two universities received a joint National Science Foundation grant and purchased a nuclear magnetic resonance spectrometer, housed at WU.

This is the second step in a very important collaborative effort," said Lawrence Barton, chairman of the UMSL Chemistry Department. He stated that the instrument would have equal access to the instrument, adding that most of the work on it would be performed by graduate students.

Essentially, this facility will be usable to students from both areas of chemistry," said Barton. "It is an interdisciplinary tool, since molecular structure is of fundamental importance to all chemistry."

The joint purchase is an example not only of cooperation, but also of making the most of scarce funds. The UMSL portion of the purchase was made possible by the four-year accrual of special equipment allotments to the Chemistry Department. The WU portion was derived from funding identified by the administration specifically for this acquisition.

"In these days of tight federal funding, such joint efforts have become essential if we are to provide the appropriate facilities for our students and faculty," said William D. Phillips, chairman of the UMSL Department of Chemistry. "Additionally, as has been the case for the nuclear magnetic resonance spectrometer, the X-ray diffractometer should do much to enhance interactions between faculty and students of the chemistry departments of the two universities, a highly desirable outcome."

Sweet receives grant to study hormones

Frederick Sweet, associate professor of biological chemistry in the Department of Obstetrics and Gynecology at the School of Medicine, has been awarded a four-year, $341,000 grant from the National Institutes of Health to continue his studies of steroid hormone interactions with specific proteins from the reproductive system.

Sweet will continue work begun at the medical school two years ago by Colin in Nancarrow, senior research scientist, from the governmental Animal Production Division of CIRSA, Blacktown, Australia, and Mohamed Sharaf, who is now an assistant professor at the University of Alexandria, Egypt.

Two years ago, the group developed methods for isolating an enzyme present in red blood cells of a variety of animal fetuses. The enzyme was discovered in the early 1970's by Nancarrow.

Hillel House designated weather relief drop

The Hillel House at 6300 Forsyth Blvd. has been designated one of two drop-off points for the Weather Relief Campaign by the Jewish community of St. Louis. Items such as warm clothing, sleeping bags and blankets can be donated in the front lobby of the Hillel House from 9 a.m. to 9 p.m. through the month of February. Donations for the purchase of space heaters can also be made at the Hillel House. Checks should be made payable to the Hillel Foundation. For more information, call 276-6177.

Two student engineers design special toys for special tots

Doll, trains, sleds, building blocks ... these traditional childhood toys have little meaning for four-year-old Cory Neustinger. Physically handicapped, Cory has only limited control of his head and arms, and he cannot sit or stand without support. So when he and his classmates at Bridgton School received a new toy recently, it had to be something special.

Two WU engineering students made sure that it was. For more than a year, Linda Blakely and Carrie Proctor worked to design and build a black box device with circuitry for a variety of electrical switches. The box makes it possible to convert many store-bought toys for use by handicapped children.

"Sparky," for example, is the child's name for a battery-operated stuffed dog that barks, jumps and wags his tail. With practice, Cory may be able to activate the toy by tilting his head or raising his hands to which a motor has been strapped. As the mercury level in the switch shifts, it sends a voltage pulse through the circuit box to the battery. A timing mechanism stops the pulse after a few seconds, so the toy can be reactive.

Others in Cory's early childhood special education class find it easier to play with Sparky by passing a hand over a light-sensitive photo cell switch, or by pressing on a foam-rubber "squeeze" switch.

Observe their teacher, Cindy Lupicki. "Some of these children are accustomed to having everything done for them. This kind of toy gives them a sense of control in their lives. For the first time, they can recognize cause and effect."

Lupicki first suggested the idea for the circuit box to Salvatore P. Sutera, WU professor and chairman of mechanical engineering. He, in turn, talked to Blakely and Proctor, who developed the idea for an independent study project.

Blakely, who graduated with an MS in mechanical engineering in December, and Proctor, an undergraduate studying electrical engineering and business, also consulted with instructors at the St. Louis Association for Retarded Children and the Judelvine Center for Autistic Children before completing their design. They learned that different switches were better suited for different handicaps, both in terms of motivating a child to play and in improving muscle tone and motor skills.

Their work resulted in a plastic cube containing circuit boards approximately 3-inches-square that can be attached to as many as two toys and four switches at once. "We haven't priced the whole thing yet," said Proctor, "but the box can probably be made for less than $20." She and Blakely said they are looking into the possibility of marketing the circuit box, perhaps with additional options for handicapped and older adults.

Because their textbook knowledge of circuits was sometimes inadequate for the job, the students worked under the guidance of Paul Dachter, WU senior electronic technician, through a computer-aided design course, "Electronic Workshop."

When the circuit box was built it was a good, practical experience, it produced other benefits for the two engineering students. "We learned a lot about the educational goals and problems of handicapped children," said Blakely. "It was a great addition that had nothing to do with engineering."

Board of Trustees announces tuition, room-board increase

Combined costs for tuition, room and board at WU for the academic year 1982-83 will be $10,133, an increase of 12.7 percent over the previous year, it has been announced by the University's Board of Trustees.

Tuition will increase by $875 to $7,125, while room costs will rise 10 percent to $3,175 for a double room in the University's South-40 residence hall area. Board will increase 9 percent to $1,275 for the year under "Meal Plan B." For students with heartier appetites, "Meal Plan A" will increase 9 percent to $1,469.

The 1982-83 increases are applicable to students enrolled in the academic areas of arts and sciences, architecture, business and public administration, engineering, and fine arts.

Washington University Record (USPS 600-430), Volume 7, Number 17, Jan. 28, 1982. Published weekly during the school year, except school holidays, at the Office of News and Information, campus box 1142, Washington University, St. Louis, Mo. 63130. Second-Class Postage paid at St. Louis, Mo. Postmaster: please forward change of address to Campus Box 1142, Washington University, St. Louis, Mo. 63130.

Editor: Charlotte Boman  (Ext. 5251)
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Campus Notes

Daniel L. Rode, professor of electrical engineering, has been elected a senior member of the Institute of Electrical and Electronics Engineers (IEEE). Senior member is the highest professional grade of membership in the IEEE. Approximately 12 percent of the institute's 213,000 members have been elected to this grade.

Peter H. Ruiger, University general counsel, has been elected to a three-year term on the executive board of the National Association of College and University Attorneys. The association serves nearly 2,500 attorneys representing 1,200 colleges and universities in the country and works closely with other national associations.

Jerome G. Spielberger, chairman of the Department of Oral Diagnosis and Radiology at the School of Dental Medicine, presented a program recently on "Radiodonic Procedures and Problems in a Private Dental Practice" to the T. L. Gilmer Dental Society in Quincy, III. The program was attended by dentists, dental hygienists and dental assistants.

Barker named political science chairman

Lucius J. Barker, Edna F. Gellhorn University Professor of Public Affairs and professor of political science at WU, has been named chairman of the Department of Political Science at the University, effective this semester.

He succeeds Richard E. Dawson, professor of political science, who has been chairman of the department since 1978. Dawson will teach and continue to do research at the University.

Barker, who joined the WU faculty in 1969, was chairman of the department from 1973 to 1978.

He will continue to direct the Center for the Study of Public Affairs within the department of political science. For the last two years, the center has brought to the University a number of professors and practitioners in a public affairs lecture series.

Barker's specialty is the judicial process and constitutional law, with primary emphasis on the U.S. Supreme Court. He has published widely and is coauthor with his brother (Twyler W. Barker, Jr., of the University of Illinois-Chicago Circle) of one of the leading texts on civil liberties. The fourth edition of this volume, Civil Liberties and the Constitution, is being published by Prentice-Hall next month.

Dawson joined the WU faculty in 1963. From 1976 to 1978, he was director of the Political Science Program at the National Science Foundation in Washington, D.C.

He was on the University Community Council from 1966 to 1968, a member of the Faculty Council from 1973 to 1975, chairman of the Faculty Council from 1974 to 1975, and a member of the Advisory Committee on Personnel from 1974 to 1975.


Retirement series begins Feb. 17

The popular Preparation for Retirement series will again be offered to WU faculty, administrators and staff personnel who are within ten years of retirement. Spouses are also welcome to attend.

Conducted by the Family and Children's Service of Greater St. Louis, the program helps pre-retirees plan for the drastic lifestyle changes that occur at retirement.

The sessions will run for seven consecutive Wednesdays, beginning Feb. 17, at the Brentwood Recreation Center, 2505 S. Brentwood Blvd., from 7:30 to 9 p.m.

Space is limited, so early registration is encouraged. For a registration form, call Meg Gilmore in the Personnel Office, Ext. 5049, or Betty Mackey in Family and Children's Service, 371-6500.
Calendar
January 28-February 6

Lectures

Thursday, January 28
11 a.m. Assembly Series Lecture, "China's Quest for Law," Jerome Cohen, a former prof. of law, Harvard University, Graham Chapel.
4 p.m. Department of Chemistry Lecture, "Silicene and Their Rearrangements in the Chemistry of Free Silicenes," 311 McMillen Lab. (3:30 p.m. coffee hour, 561 McKinley Library.)

Friday, January 29

Saturday, January 30
11 a.m. University College Saturday Seminar Series, "The Individual as Citizen," Peter N. Keen, WU prof. of history. Sponsored by the Master of Liberal Arts Program, Ann Whitney Olin Women's Building Lounge.

Monday, February 1
4 p.m. Department of Biology Seminar, "Structure and Expansion of Genes Encoding the Soybean Seed Storage Proteins," Roger N. Beachy, WU assoc. prof. of biology and Exptession of Genes Encoding the Soybean Seed Storage Proteins, WU and Their Rearrangements in the Chemistry of Free Silicenes, sponsored by the Student Union Speakers Committee.

Tuesday, February 2
4 p.m. Cellular and Molecular Programs Lecture, "RNA — Protein Interactions," Olaf Uhlenbeck, Ichiro Kita, Goto Aud. McDonnell Medical Sciences Bldg., 4570 McKinley.

Wednesday, February 3
4 p.m. Microbiology Research Seminar, "Ti and Ri Plasmoids as Species for Genetic Engineering of Higher Plants," Mary-Dee Chilton, WU assoc. prof. of biology. Microbiology Library, room 509, 4577 McKinley.

Thursday, February 4

Friday, February 5
6 and 8:30 p.m. WU Association Documentary Film Program, "Portugal," with adventure film producer, Philip Walker. Graham Chapel. For ticket information, call 889-5122.

Music

Thursday, January 28
8 p.m. Department of Music Collegium Musicum Concert, with WU graduate student Louis Schutz, recorder soloist. Graham Chapel. No charge.

Friday, January 29
8 p.m. Department of Music Concert with Bill Lemhe, jazz guitarists, Graham Chapel. No charge.

Sunday, January 31
7:30 p.m. University City Symphony Orchestra, conducted by William M. Schatzkamer, WU prof. of music, performing Symphony No. 5 by Tchaikovsky, Graham Chapel. No charge.

Films

Saturday, January 28
7:30 and 9:45 p.m. WU Filmboard Series, "From the Life of Marionettes," $2. Brown Hall Aud.

Friday, January 29
7:30 and 9:45 p.m. WU Filmboard Series, "Elephant Man," $2. Brown Hall Aud. (Also Sat., Jan. 30, same times, Brown.)

Sunday, January 31
6:30 and 7 p.m. WU Filmboard Series, "From Russia With Love," $2. Brown Hall Aud. (Also Mon., Feb. 1, 7:30 and 9:30 p.m., Brown.)

Tuesday, February 2
7:30 and 9:30 p.m. WU Filmboard Series, "Return of the Pink Panther," $2. Brown Hall Aud.

Wednesday, February 3
7:30 and 9:15 p.m. WU Filmboard Series, "Diabolique," $2. Brown Hall Aud. (Also Thrus., Feb. 4, same time, Brown.)

Friday, February 5
8 and 10 p.m. WU Filmboard Series, "Arabian Nights," $2. Brown Hall Aud. (Also Sat., Feb. 6, same times, Brown.)

Performing Arts

Friday, January 29
8 p.m. Edison Theatre Series, The Acting Company, in two sparkling comedies. On Friday, Jan. 29, The Country Wives by William Wycherley will be performed. On Saturday, Jan. 30, Twelfth Night by William Shakespeare will be performed. Edison Theatre, Tickets are $5 general admission; $4 for students. Tickets available at Edison Theatre box office, 889-6543.

Calendar Deadline
The deadline to submit items for the calendar period of Feb. 18-27, is Feb. 4. Items must be typed and must state time, date, place, nature of event, sponsor and admission cost. Incomplete items will not be printed. If available, include speaker name and identification and the title of the event. Those submitting items, please note name and telephone number. Address items to Susan Kruegel, calendar editor, Box 1142.