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Day-long rally here to mark Earth Day

Amid the sit-ins and protest marches of 1970, a senator from Wisconsin, Gaylord Nelson, sparked the idea of teach-ins about the environment. The idea spread and Earth Day was born.

On Sunday, April 22, 1990, the 20th national Earth Day will be celebrated. Along with more than 1,500 other universities and colleges across the country, Washington University will participate in this year’s celebration.

To avoid conflict with Thurne Carnival, the University officially will observe Earth Day on Friday, April 13. An all-day rally beginning at 10 a.m. will be held in Bowles Plaza.

According to Walter H. Lewis, Ph.D., professor of biology, Earth Day serves a reminder of the importance of public awareness and support in solving environmental problems. “If the public doesn’t know about the implications of the shrinking rain forest, then how can we prevent the future,” says Lewis, who, along with his wife, Memory Elwin-Lewis, Ph.D., has been studying plants that the Jivaro Indians of the Amazon rain forest use for medicine.

In addition to the lectures by faculty and students on various aspects of the environmental movement, representatives from such groups as the Rainforest Alliance and the Sierra Club will be at the rally to distribute information. A trash sculpture will be presented to University Food Services in demonstration of how much Styrofoam, plastic and paper is wasted each day in campus eateries.

Because threats to the environment are global, local issues are still a part of daily life, students are voicing their growing concern for the planet’s safety. Senior Kris Sari, a member of the University’s Earth Day committee, said, “Booth even led a campus effort to encourage Missouri Rep. Richard Gephardt to work for the environment. More than 1,300 students signed face masks like those used when working with hazardous chemicals, which were then presented to Gephardt, along with a plea to support stronger clean air legislation.

Washington University students also are organizing a bush- and tree-planting ceremony that will turn a vacant lot in an economically depressed area of St. Louis into a park. Fraternities, sororities, dorm floors and social action groups are raising money as part of the national Adopt-a-Forest project in the Belize rain forests.

In addition, students here are conducting a campus environmental audit. After determining how much waste is generated and how much recycled paper is used on campus, the students will present an environmental impact statement to the administration. And to demonstrate their support for conservation, students are taking a “green pledge,” a pledge that they will use recycled paper and buy products made by companies who are for the environment. More than 500 students have signed green pledges to date.

T-shirts, designed by junior Michael Koch are being sold to fund Earth Day activities at the University. The shirts display a globe on the front and, on the back, the last stanza of “Magnitudes,” a poem by Howard Nemerov, U.S. poet laureate and Edward Mallinckrodt Distinguished University Professor.

‘One of the old boys’
Engineer traces earliest science lab to Greek philosopher

A professor of mechanical design at Washington University has traced the world’s earliest known research laboratory to the Greek scientist and philosopher Pythagoras of Samos.

In a paper that probes the origins of several scientific tools and principles, Andrew D. Dimarogonas, Ph.D., also shows that Pythagoras developed a scientific axiom previously attributed to 17th-century scientist Galileo Galilei. Moreover, Dimarogonas offers a novel interpretation of a line in a famous Greek play that reveals the existence of the pendulum in 4th-century Greece — the earliest mention of the pendulum in any literature.

In 4th-century Greece, Pythagoras and his school conducted experiments to prove the relationship between sound consonances, or musical intervals, and the natural frequencies of physical systems, as well as a rational method of measuring sound frequencies.

Pythagoras employed the experimental method, upon which all modern science is based, and proved the natural frequency of vibrating systems. Furthermore, when he realized that the various tines were made by different hammer sizes and not the difference in arm strength, he conducted further experiments to prove that the natural frequency of a system is a property of that system and not something dependent on external excitation.

This last theory, which applies to any physical system, was previously thought to have been expounded only in the past 300 years, starting with Galileo’s observation of the isochronism, or time-measuring property, of the pendulum. Not until the late 19th century, with the writings of British scientist Lord Rayleigh, was the theory explicitly stated.

Boethius also describes Pythagoras’ later work in his home with several simple systems such as vibrating strings, pipes, vessels and circular plates and the dependence of their natural frequencies on dimensions as further proof that the Greek scientists rigorously developed a laboratory to test sound and vibration principles.

A drawing from Boethius’ work illustrates Pythagoras happily hammering a series of bells in his “laboratory” that Pythagoras used to test the natural frequencies of physical systems. Pythagoras’ laboratory, Dimarogonas asserts.

Dimarogonas cites a passage by Boethius that describes a laboratory incident in which Pythagoras (circa 570 to 497 B.C.) passed a metal shop — perhaps a precursor to the village smithy — and was struck by the different tones made by the ringing vibrations of hammer on metal. Pythagoras conducted an impromptu experiment, finding to his surprise that the different vibrations were not a result of the variations in strength of the men swinging the hammers (the excitation), but rather the different sizes, or mass, of the hammers.

He weighed the different hammers and noted their ratios and their relationship to sound consonances, publishing his findings in a book that was instrumental in the development of the Western University Computer Integrated Manufacturing Laboratory, a facility featuring innovative applications of computers that promote efficiency through automated manufacturing and computer-aided design.

Drawing upon the writings and illustrations of the Roman author Boethius (480-524 A.D.), Dimarogonas shows that Pythagoras, whose geometric theories have been taught to every geometry student for centuries, developed a vibration research laboratory during the 5th century B.C.

It is generally believed that the ancient Greeks were only theoreticalists and not experimentalists,” Dimarogonas says. “With many philosophers this is true, but it is not applicable to everyone — certainly not Pythagoras nor Archimedes, nor Heron. The sciences of mathematics and mechanics and the theory of vibration, a subdivision of mechanics, were defined rigorously in the middle of the first millennium B.C. by Pythagoras and others. There is a small but adequate body of literature to illustrate this.”

“This is a surprising and illuminating find.... it is the first time the word laboratory has been associated with one of the old boys.”

— Richard Hattenberg
Northwestern University

Dimarogonas, W. Palm Professor of Mechanical Design, is an expert in vibrations and mechanical design. The engineering professor, who has a special interest in the history of mechanics, was instrumental in the development of the Washington University Computer Integrated Manufacturing Laboratory, a facility featuring innovative applications of computers that promote efficiency through automated manufacturing and computer-aided design.

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Two workshops, one on "seeing more," are being offered by the Missouri Botanical Garden and the St. Louis University's Fine Arts Institute. Both are open to artists who work in the local community.

Economics scholar to give lecture; conference honors Minsky's work

Award-winning economics scholar and author Benjamin M. Friedman will discuss "Risks in Our High-Debt Economy: Depression or Inflation?" at 11 a.m. Friday, April 20, in Graham Chapel. The lecture, part of the Assembly Series, is free and open to the public.

Friedman, the William Joseph Maier Professor of Political Economy at Harvard University, also will be the keynote speaker at an April 20-21 conference that honors the work of Hyman Minsky, a professor of economics at Washington University. The conference, which focuses on financial risk, government policy and macroeconomic performance, is expected to attract more than 35 of the nation's leading economics scholars.

Minsky, an authority on money and financial theory and institutions, is known for his interpretation of Keynesian Theory as a prologue to the analysis of business cycles and for work on the integration of financial and production facets within an economy. He is leaving the University to join the Jerome Levy Economics Institute.

Friedman is author of several books, including the 1986 Day of Reckoning: The Consequences of American Economic Policy Under Reagan and After, for which he received the George S. Eccles Prize from Columbia University for excellence in writing about economics. Friedman's research has focused on financial markets and monetary and fiscal policy.

Friedman is director of financial markets and monetary economics research at the National Bureau of Economic Research. He also is a member of the Brookings Panel on Economic Activity and the Council on Foreign Relations. A former Marshall Scholar at Cambridge University, Friedman worked with the Morgan Stanley & Co. investment banking firm before joining Harvard's faculty in 1972.

For information on the lecture, call 889-4620. For information on the conference, call 889-5632.

Two art workshops will be offered

Two workshops, one on "seeing more color," and the other on landscape painting, are being offered by the University's Fine Arts Institute. Both programs are designed for adult artists in the local community.

Phyllis Platter, an artist whose watercolor and oil still life can be seen in St. Louis' Locus Gallery, the Missouri Botanical Garden and the St. Louis Art Museum, will conduct the "Seeing More Color" workshop from 9 a.m. until noon April 16-20 at the Center of Contemporary Art, 524 Trinity Ave., in University City. The course is designed to "explore new depths of color perception." This program is open to artists who work in any medium. The registration fee is $25.

A second workshop, titled "Land and Cygnocres Painting," will be taught by renowned local artist William Quinn from 9 a.m. until noon on Mondays, Wednesdays and Fridays, May 30-June 18, in Bixby Hall. Quinn has been a faculty member of the School of Fine Arts for 32 years. This is the last summer school class he will teach before retirement. Registration is $225 and must be received by April 15.

For more information on either workshop, call the Fine Arts Institute at 889-4643.

Science lab

A laboratory appearing this early that I know of. And it is the first time the word laboratory has been associated with one of the old boys.

Literature, or the lack of it, is what makes the difference between the contributions of the ancients, especially the Greeks, amongst whom it is evident. Much of the knowledge between 600-300 B.C. was lost, not recorded or was known to second guess, as some philosophers, for instance, were a mysterious, mystical group. No, recent evidence suggests the ancients were as a whole to have an appreciation for the Pythagorean and its operations. Those who divulged the Pythagorean facts were known to have used the Pythagorean theory.

Pitch and pendulum

It is Galileo who is most often credited with discovering the pendulum's properties and advancing its applications, and, at times, with inventing the apparatus. But Dimarogonas contends that the pendulum was known and used by the ancient Egyptians and the Chinese long before Galileo measured its isochronism in the 17th century. The pendulum and its variants are major components of a wide assortment of machinery, most notably the clock. It is known to everyone who has read Poe's "The Pit and the Pendulum," or observed catapaults in action in "Spartacus," "Cleopatra" or any of the lesser known movies of that genre.

"To say Galileo is the inventor of the pendulum is quite simply absurd, just as it is erroneous to say Newton developed his laws of physics on his own, when some of these laws were readily available in the work of the ancients and the other ancients," Dimarogonas says. "Yet this is all too often the way history is depicted in textbooks. Both men should be credited with making their principles known and understandable to many. But we must be conscious of the roots of these developments.

Dimarogonas says legend suggests that Diocles, who lived in mid-2000 B.C., invented the pendulum. The first tangible proof of its existence comes from about 6th century B.C. vases that show them as components of early type clocks, weighing and leveling devices. Dimarogonas believes he has found the earliest written reference to the pendulum in a timing device in the 4th-century B.C. comedy "Frogs" (Ranae). Aristotle, the author, makes a direct reference: "The music should be balanced with an oscillator," in Greek, talanto mousiki stathmisetai.

"This phrase in Greek is a double entendre that is subject to different interpretations," says Dimarogonas. "One is 'the poetry should be weighted in gold,' which is a metaphor meaning 'the poet has to be paid what he is worth, Aristophanes' joke. The oscillator is actually a reference to the metronome, a timing device that is essentially a pendulum. We must infer from this that Aristophanes knew that music is balanced, or timed, with an oscillator; otherwise, how could he have used it in a joke?"

The Chinese used the pendulum, Dimarogonas says, as early as the first selenology equipment about 132 A.D.

A tall, circular instrument with the pendulum is known as an astrolabe, the device held balls that would fall into cups placed in a division that would indicate the time or position of an object in the sky. This is the first arrangement so that when the pendulum would vibrate after absorbing the shock of a struck ball, the balls would fall in the direction of the tremor.

Likewise, the Greeks, Chinese and Middle-Easterners used pendulums as "vibration transducer-amplifiers," or devices that detected the underground tunneling of enemies laying siege to cities.

History of scientific thought

Dimarogonas' research has a reverberation in both the scientific and historical communities. Two researchers at Purdue University, Werner Sodel, Ph.D., professor of mechanical engineering, and W. Grady Foyle, Ph.D., professor of history, have shown a strong interest in the subject. The two are co-authoring a book on Greek mathematician Archimedes, an ancient whose mathematics "widens the broader interest in this field." Foyle notes that Dimarogonas sheds light on a fascinating era that is often typified: 'Dr. Sodel and I are convinced the ancient Greeks and Romans were doing more interesting things than spouting philosophy or writing poetry. Dimarogonas' work supports that," says Foyle.

The research on the ancient cultures were making are underestimated, if not ignored.

As for Pythagoras, the stalwart who Foyle calls "a brilliant mathematician and flaming mystic," he credits his own famous theorem, memorized by generations of high school geometry students.

"The theorem goes back at least to the Babylonians," Dimarogonas says. "There is good evidence from scripture on walls and so forth that the ancient Hebrews had been using the theorem for their building projects, measurements, and, at times, with inventing the stone. For the ancient Greeks and Romans, it is often typecast: 'Dr. Sodel and I are convinced the ancient Greeks and Romans were doing more interesting things than spouting philosophy or writing poetry. Dimarogonas' work supports that," says Foyle.

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Shirley K. Baker, dean of university libraries, has accepted an invitation to serve on the Association of Research Libraries' Committee on Bibliographic Instruction. The three-year appointment calls for participation in examining issues relating to future activities for the association.

Mario A. Blane, Ph.D., assistant professor of Spanish, chaired three sections at the 1990 Modern and Medieval Studies Conference at the University of Michigan. His papers mark the end of his formal training and the beginning, for most, of their scholarly activities, research and general expertise.

The free exhibit, titled "M.F.A. I," features the works of seven master's degree candidates: painters Charles Caldeney and Shelldy Hendrickson; sculptors Ronald Stephen Guronwitz and Moira Lewis; librarian Benjiamin Mersch; and printmakers Rosamaria Landi and Tamara Gebera.

A second exhibit, titled "M.F.A. II," features projects of four other graduate students and will run from April 20 to May 15.

For more information, call 889-4523.

Business school will present four alumni awards and Dean's Medal

The John M. Olin School of Business will present four distinguished alumni awards as well as the school's Dean's Medal during a reception at the new Ritz-Carlton Hotel in Clayton. The Dean's Medal, a significant service to the school will be presented to Vernon W. Piper, B.S.B.A. '55, and his wife, Marie Piper, of Burbank, Calif. Lifetime members of the Williams College Athletic Hall of Fame lead several fund-raising drives, as well as personally endowing both a scholarship and a professorship at Olin.

Olin presents its Distinguished Business Alumni awards annually to four graduates whose successful careers have shown the characteristics of leadership, proactive thinking, high standards, uncompromising integrity, commitment, courage and confidence. The 1990 recipients are Lee Albrecht, Bruce V. Camp, Mahlon Rubin and Lewis N. Wolff. Abraham, B.S.B.A. '40, is chairman and chief executive officer of Associated Merchandising Corp., one of the largest and oldest apparel manufacturers in the country. Abraham manages 22 overseas offices that together have provided member stores with more than $3 billion in merchandise.

**Carp, B.S.B.A. '67, is vice chairman and chief operating officer of Solomon Brothers Inc. in New York. Wolf, M.B.A. '61, is managing partner, Wolff-Sennot-Butter, a leader in the real estate development business. Wolff's award-winning $200 million redevelopment of an urban center in San Jose, Calif., has been the cornerstone of his 24-year career. His firm recently moved into hotel development, ownership and management.

For more information on the dinner, call Jill Williams at 889-5872.

Award-winning poetry critic to give talk

Helen Vendler, William R. Kenan, Jr. Professor of English and American Language and Literature at Harvard University, will give the Phi Beta Kappa-Sigma Xi lecture at 11 a.m. on Wednesday, April 18, in Graham Chapel.

The "Vendler's lecture, titled "Some Phi Beta Kappa Poems," is part of the Assembly Series. The lecture is free and open to the public.

Vendler, who is the first woman to receive a university chair at Harvard, is a leading critic of English poetry. Her essays have appeared in the New Yorker and the New York Review of Books. She has been a judge for the Pollock Poetry Prize and for the Guggenheim Foundation awards in literary criticism.

Vendler has written many volumes on poets — Wallace Stevens, John Keats and George Herbert, for example — as well as general studies of contemporary American and English poetry. Her 1969 book, On Extended Wings: Wallace Stevens' Longer Poems, won the 1971 Guggenheim Fellow, has received several Pulitzer fellowships from the National Endowment for the Arts. She is the 1981 recipient of the National Book Critics Circle Award for criticism and is a member of Phi Beta Kappa. The lecture honors the initiates of the Phi Beta Kappa society at Harvard. It is open only to academic honoraries at Washington.

For more information on the lecture, call 889-4260.

Earth Day continues from p. 1

"Public awareness is a very strong point," emphasizes Surt, "but action is what's necessary to get the planet's safety to the future generation. We need an Earth Day everyday.

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.

In an alcoholic's brain, something is awry, says an article in the Feb. 26 Chicago Tribune. Most leading alcoholism researchers agree that in many cases at least part of the problem is inherited. Carla M. Dorough, M.D., professor of genetics and professor and head of psychiatry, is one of the pioneers studying the role genetics plays in alcoholism. The article also appeared in the Jan. 21 Scientific American (Pu.) Sunday Times.

The father who comes home for a second career spawn ends the evening providing counsel may be talking to endangered species, says an article in the Feb. 19 New York Times. For various reasons, the remaining members of the American Labrador Retriever Conwy-Long, instructor of women's studies, says it's not surprising that today's men and women are the right place — if only their bodies could be there. The story also appeared in the Detroit Free Press on Feb. 20, the Portland Oregonian on Feb. 21 and the Provo Deseret on Feb. 23.

Fine arts graduate students display work

Paintings, prints, sculptures and glasswork by Washington University School of Fine Arts graduate students are available through April 18 at the Gallery of Art in Steinheil Hall. The faculty's second annual exhibition marks the end of their formal training and the beginning, for most, of their scholarly activities, research and general expertise.

The free exhibit, titled "M.F.A. I," features the works of seven master's degree candidates: painters Charles Caldeney and Shelldy Hendrickson,

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LECRURES

Thursday, April 12
9:30 a.m. Dept. of Internal Medicine 14th Annual J. Jerome Visiting Professor of Medicine, Brian D'Adda, "Alcohol 1 Alcohol: Morbidity and Mortality."

Friday, April 13
9:30 a.m. Dept. of Internal Medicine "Workshop on Diabetes and Pregnancy: Prevention and Management."
12 Noon. Newman Center Good Friday Liturgy.
8 p.m. Edison Theatre "OVATIONS!" Series, Friday, April 20

Saturday, April 14
11 a.m. WU Women's Basketball vs. Princeton College, 1 p.m. Women's Tennis vs. Princeton College.

Sunday, April 15
10 a.m. WU Spiritual Fellowship Ministries
1 p.m. Concordia College Choir presents a Concert at the WU Vocal Jazz Ensemble, "The Art of Jazz," Room B-2, Biever Hall. For more info., call 482-5622.

Wednesday, April 18
7 p.m. Women's Tennis vs. Princeton College.
8 a.m. WU Women's Basketball vs. Washington University at Webster University, 1 p.m. Women's Tennis vs. Washington University at Webster University.

Thursday, April 19
9:30 a.m. Dept. of Internal Medicine "Allergy: An Overview of the Basic Science of Allergies and Asthma."
7 p.m. Women's Tennis vs. Washington University at Webster University.

Friday, April 20
8 p.m. Filmboard Series, "Marat/Sade," Co-sponsored by St. Louis Art Museum. For more info., call 727-9574 or 727-8255.

FILMS

Thursday, April 19
7:30 and 9:30 p.m. Filmboard Series, "Where Have All the Dolphins Gone," (Also Sat., April 21, same time, and Sun., April 22, at 9:30 p.m.) $2.

Sunday, April 22

Monday, April 23

Wednesday, April 25
7 and 9 p.m. Filmboard Series, "The Many Adventures of Winnie the Pooh," (Also Sat., April 21, same time, and Sun., April 22, at 9:30 p.m.) $2.

Thursday, April 26
1 p.m. WU Women's Tennis vs. Washington University at Webster University.
10 a.m.-4 p.m. Women's Tennis vs. Clark College.
1 p.m. Women's Tennis vs. Washington University at Webster University.

Friday, April 27
7:30 and 9:30 p.m. Filmboard Series, "Zen and the Art of Everyday Life," Sheng-yen, abbot, Furen Zen Monastery, New York. For more info., call 727-9574 or 727-8255.

Saturday, April 28
8 p.m. Department of Philosophy 12th Helen Sweener Memorial Essay Competition Winner's Colloquium, "The Nature of Knowledge," William Evenson. For more info., call 487-1604.

Sunday, April 29
10 a.m. WU Spiritual Fellowship Ministries
1 p.m. Department of Philosophy 12th Helen Sweener Memorial Essay Competition Winner's Colloquium, "The Nature of Knowledge," William Evenson. For more info., call 487-1604.

Tuesday, May 1
11:30 a.m.-3:30 p.m. "Eastern Languages and Literatures Lecture, "The Language of Bertrand Russell and Nelson Goodman With Reference to Fictive Expressions," Takehiko Taguchi, professor, Dept. of Philosophy. For more info., call 893-5900.

Wednesday, May 2
7 p.m. "A New Kind of German Master of Woodcut," (Also Sat., May 5, same time, and Sun., May 6, at 9:30 p.m.) $2.
8 p.m. Filmboard Series, "Poems," Helen Vendler, Kenan Professor of Literature, Harvard University, 1963, for more info., call 727-9574 or 727-8255.

Thursday, May 3
1 p.m. WU Women's Tennis vs. Washington University at Webster University.
11 a.m. WU Women's Basketball vs. Webster University.
2 p.m. "The Andy Williams Show," (Also Sat., May 5, same time, and Sun., May 6, at 9:30 p.m.) $2.

Friday, May 4
7 p.m. "The Andy Williams Show," (Also Sat., May 5, same time, and Sun., May 6, at 9:30 p.m.) $2.
8 p.m. Filmboard Series, "Spartacus," (Also Sat., May 5, same time, and Sun., May 6, at 9:30 p.m.) $2.

Saturday, May 5
11 a.m. WU Women's Basketball vs. Webster University.
8 p.m. Filmboard Series, "The Andy Williams Show," (Also Sat., May 5, same time, and Sun., May 6, at 9:30 p.m.) $2.