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A Washington University study shows that Los Angeles' industrial emissions are appearing some 240 miles away. Smog in the L.A. basin is pictured above.

## Downwind damage

### Los Angeles pollutants are appearing in desert, study shows

Where do air pollutants go to "get away from it all?" In Los Angeles, they head for the desert.

An interdisciplinary study led by Washington University scientists shows that halocarbons emitted from industrial sites in the greater Los Angeles area are dispersed into the Nevada and Arizona deserts and show up a day or two later, after traveling as far as 240 miles. The halocarbon tracers are clear proof that Los Angeles pollution is seeping far away from its source into the once pristine desert air. It is the first chemical tracer study to document the regular impact of Los Angeles pollution so far downwind.

In a novel finding, the researchers showed that the average concentrations in the desert exhibited a seven-day cycle that mimics the Los Angeles workweek, with five days of elevated levels of tracers and two days of lowered readings.

"The sun sets every night, and the earth goes around the sun every year, but no geophysical variable takes weekends off," says Warren White, Ph.D., senior research associate in chemistry, in explaining the remarkable data set. "Diurnal (daily) and seasonal patterns in pollutant levels may be driven by natural cycles in winds and radiation. But only activities that reflect the human work cycle show a clear pattern of five days on, two days off. Nature simply doesn't work this way."

The Los Angeles halocarbons are chemical cousins of an environmentally devastating chemical family called chlorofluorocarbons (CFCs), which erode the earth's protective ozone layer and contribute to global warming. Chlorofluorocarbons are found in a wide variety of consumer products, but the Los Angeles halocarbons are used primarily as industrial solvents. The scientists fear that the components of Los Angeles smog, which accompany the halocarbons, may be traveling as far away as the Grand Canyon, contributing to a potential air pollution problem there and dimming the famous view.

Writing in the July 1990 issue of *Geophysical Research Letters*, White and Edward S. Macias, Ph.D., professor

of chemistry and provost, report monitoring levels of methylchloroform (1,1,1, -trichloroethane) at four stations — in the Los Angeles basin, on a mountaintop pass near the city, at Spirit Mountain in Nevada, and at Meadview, Ariz., less than 15 miles from the mouth of the Grand Canyon. They trapped samples in monitors called electron-capture gas chromatographs, which measure the concentration of different gases in the air. They used the chemical as a "tracer" because it is not produced naturally; thus, it is a telltale clue that the source of the pollution is human. The measurements were carried out by chemist David F. Miller and physicist David E. Schorran, Ph.D., of the Desert Research Institute (DRI) in Reno, Nev., who co-authored the paper with White, Macias and meteorologists Thomas E. Hoffer, Ph.D., of DRI and David P. Rogers, Ph.D., of the Scripps Institution of Oceanography in La Jolla, Calif.

#### 'Smoking-gun' evidence

In addition to showing that the methylchloroform levels paralleled the human workweek — in effect, like humans, taking a couple of days off — the data also showed rapid changes in tracer levels during the course of the day. The study, begun six years ago as part of the Greater Los Angeles Distant Impact Study and funded by the Southern California Edison Co., represents an unusually detailed and complete body of pollution data on regional Los Angeles air pollution. It is considered an advance in the development of tracer techniques that will help pollution experts determine "smoking-gun" evidence for future studies.

"The work will be considered a landmark pollution study because it shows that the signal, or chemical 'fingerprint,' is sharp and distinct over three states," says F. Sherwood Rowland, Ph.D., professor of chemistry at the University of California, Irvine. Rowland and fellow professor of chemistry at California-Irvine Mario J. Molina, Ph.D. (now at MIT), were the first scientists to warn the world of the danger of chlorofluorocarbons to the ozone layer. Their warnings led to the banning of CFCs from aerosol cans in the late 1970s and have increased

world awareness about the danger of CFCs to the environment.

"The study presents a highly sensitive system that shows the atmosphere doesn't mix these pollutants as much as previously expected," continues Rowland. "Other air pollution researchers now will be sparked to see how far they will be able to trace signals downwind."

#### Dimming desert vistas

"The picture is one of a summertime desert awash in urban effluents," says White. "The level of methylchloroform we have detected is a clear indication that a portion of the air has come through the Los Angeles basin. When it comes through the basin, it picks up the smog as well, including light-scattering particles and ozone. The pollutant readings are correlated with the methylchloroform readings. When you find methylchloroform, you find ozone as well as haze."

The study is ongoing, with measurements being taken 365 days a year, beginning in 1985. The researchers have examined hourly measurements of pollutants for the years 1985 to 1987. White says their data show that the average summertime concentrations of ozone at Spirit Mountain are about 60 parts per billion (ppb). The original National Ambient Air Quality Standard, set in 1971, was 80 ppb. When there is little transport from Los Angeles, the average ozone concentration at the Nevada site is about 50 ppb. But when the methylchloroform levels are high, the ozone concentration typically reads above 85 ppb.

Ozone is what experts call a secondary pollutant, a reactive as opposed to inert gas (such as methylchloroform) that forms in a complicated fashion when normal oxygen adds another atom and interacts with other pollutants such as hydrocarbons and nitrous oxides. Weather patterns, ventilation rates and the degree of sunlight to which it is exposed also influence its formation. In the stratosphere, the layer of ozone molecules serves as a sunscreen; in the lower atmosphere, ozone is a nasty lung-irritating pollutant.

"It's not so surprising to see high

*Continued on p. 3*

#### Visiting professorship added

### Architecture school receives \$1 million gift

The School of Architecture recently received a \$1 million gift to establish the Ruth and Norman Moore Visiting Professorship, Chancellor William H. Danforth announced. Ruth Moore Garbe and Norman Moore, brother and sister, both graduated from the University.

The new chair will enhance the 20-year-old visiting faculty program and will be filled annually beginning with the academic year 1991-92.

"The Moores rank among the University's most illustrious alumni," Danforth said. "Their dedication and generosity toward their alma mater is second to none, and they have played a significant role in the development of our School of Architecture."

In 1986 the Moores gave a \$1 million gift to endow the Ruth E. and Norman G. Moore Professorship in Architecture, concentrating on urban planning and design. Udo Kultermann, Ph.D., professor of architecture, has held the chair since it was established.

"Architecture has become a thoroughly international discipline," said Constantine E. Michaelides, dean of the School of Architecture. "The Ruth and Norman Moore Visiting Professorship will strengthen our visiting faculty program, which is crucial for giving our students an international perspective on the practice of architecture."

Garbe graduated from Washington University in 1929 with a degree in liberal arts. She received a master's degree in political science and finance from the University in 1930. She was an employee of the St. Louis Star-Times before becoming the Washington, D.C., correspondent for the Chicago-Sun Times, and later the paper's editor of urban planning and city design. Garbe, who died in January 1989, served on the University's Board of Trustees from 1966-1970 and was a member of the University's William Greenleaf Eliot Society.

Moore graduated in 1933 from Washington University with a degree in architecture and went on to become a successful architect and consultant, establishing his own firm specializing in hospital design.

Moore has designed hospitals on the West Coast, including San Francisco General and Highland Hospital in Oakland, as well as many hospitals in Hawaii. Earlier in his career, Moore was a regional hospital architect and consultant for a federal program created by the Hill-Burton Act.

The Hill-Burton Act, which was passed in 1946, sought to build more hospitals nationwide, particularly in less populated areas. Moore was responsible for approving hospitals built in California, Washington, Oregon, Nevada, Utah, Alaska and Hawaii.

As a student, Moore was active in many athletic programs at Washington University and was a member of the swimming team that won the Missouri Valley Championship for four consecutive years. He is retired and lives in San Francisco, Calif., where he continues to enjoy tennis, skiing and golf.





After 33 years, William Quinn conducts his last class at Washington University before heading to "retirement" in Bruges, Belgium.

## Belgium bound

# Artist William Quinn retires to 'perfect town'

His furniture has already crossed the Atlantic and cherished house plants have been given away to appreciative friends as artist William Quinn, his wife, Jeannine Goeminne, and their beloved cat leave St. Louis for a new life and new adventures in Europe.

A School of Fine Arts professor for 33 years, Quinn recently bought a home in Bruges, Belgium. Although he is retiring, Quinn does not plan to be idle. "I have always needed to keep active — whether it's taking a walk, building a fence or doing a painting," he says.

Professor Bill Kohn, a classmate and later colleague of Quinn's for the last 42 years, calls Quinn "one of the most consistently productive artists I know. Not only has his work constantly grown and evolved, but Bill has evolved and changed in response to his experiences and his environment, whether that environment is Greece, Paris or Webster Groves, Mo."

Quinn already has plans to renovate his new house, a 170-year-old structure that looks out on to one of many canals in Bruges. Pointing to the floor plans, Quinn talks of knocking out some walls and refinishing the third floor, where he will establish his studio. The self-proclaimed "dyed-in-the-wool romantic" plans to continue painting, with the Belgian countryside ("the tree-lined lanes are just wonderful") as his inspiration. He will exhibit his works in the numerous galleries in nearby Brussels and Antwerp.

Quinn, who earned his bachelor of fine arts degree from the University in 1953, has taught every painting course ever offered at the School of Fine Arts, from the introductory to the advanced. In recent years, he has found it most rewarding to teach the basic, or core, courses.

"It seems that as I have gotten older I have become less patient. With the introductory courses I get a more immediate response to students' projects. I can really see results. It's like being a first-grade teacher and teaching kids to read. When they make out each word it gives you a real sense of accomplishment. Likewise, when I can teach a student to draw a brick in the right perspective it is a very rewarding feeling."

The move to Bruges will involve a dramatic change in every aspect of daily life, acknowledges Quinn. Food shopping, for example, is a daily errand that takes place in small family-owned shops rather than large grocery

stores. In addition, people often travel by foot or bicycle rather than car — the mild weather makes this more feasible in Belgium than it would be elsewhere. And, of course, conversations are held in Dutch rather than English. This will present a special challenge for Quinn, who says that after months of Dutch lessons he still "speaks like a four-year-old."

Choosing to move to Bruges was a perfect compromise, says Quinn, who has traveled extensively in Europe since his first trip to Italy in 1957 as the Milliken Travel Fellow, the outstanding graduating senior elected by the faculty.

"I fell in love with Paris when I was there during my sabbatical in 1982," says the 61-year-old Quinn. "Beginning in 1985 we started looking into retiring to Paris, but got discouraged by the cost of living there. My wife, who is Belgian, has relatives in Bruges. When we visited them, the town seemed perfect. It's close to Paris, which I love, but it's more affordable. There is no artist colony, thank God, but there are plenty of good galleries nearby."

***The self-proclaimed "dyed-in-the-wool romantic" plans to continue painting, with the Belgian countryside as his inspiration.***

"Living in Bruges also reaffirms what I think old people need. With their sense and appreciation of history they like living in old settings with old buildings and old art. It's a way to feel stabilized and secure while the world just keeps moving faster and faster."

Which doesn't mean that Quinn isn't stable and secure, considering that he has received more than 36 awards and prizes in his distinguished career, including a 1986 NEA fellowship, and his paintings hang in the collections of more than 20 museums (including the St. Louis Art Museum and the Nelson-Atkins Museum in Kansas City, Mo.) and more than 100 private collections.

Quinn says his 1982-83 sabbatical, which he spent at the Cite Internationale des Arts in Paris, had the greatest effect on his life. The Cite was founded in 1965 by the writer Andre Malraux with backing from the

DeGaulle government, with the express intent of enabling artists both foreign and French to live and work in Paris. Artists apply to the institution and those selected have free use of one of 250 studios to live and work in for up to two years. After that the artist is considered an "ancienne," or veteran, and has the right to return. The studios, housed in a building on the right bank of the Seine River, overlook Ile St. Louis, Notre Dame Cathedral and the Eiffel Tower.

"It's a miracle," he says about the institution. "Where else can you go to live rent free in an enclave with 250 artists and musicians from all over the world? The building constantly has exhibits and receptions in the gallery and free concerts in the auditorium. You can have as much interaction with these other artists as your language skills can get you. And, to make it all the more amazing, this takes place in Paris, which is a wonderful city. The genius of Paris is that, unlike any American city, it is able to change without decay. It is in a constant state of being renewed."

Quinn left the University a memento of his time at the Cite, having arranged in 1985 for the University to purchase a 100-year lease on one of the studios.

Kohn points to this accomplishment with great appreciation and admiration. "He did that all by himself, you know," says Kohn. "And the entire school is very thankful that he did. We have all benefited from his initiative."

Quinn's easy-going good humor and intellectual curiosity will be missed, and Quinn will miss some aspects of his St. Louis life. But, he is ready for a change, he says.

"It's a different world than when I was in school," he observes. "With the widespread use of computers and technology, there is no longer the old Beaux Arts emphasis on skill development. I am not interested in fighting the trend. It's time to pass the torch."

Joe Deal, dean of the School of Fine Arts, speaks for the entire faculty when he acknowledges that "Bill Quinn has more than earned the time to devote to his own work, after being a devoted teacher in the School of Fine Arts for more than 30 years. We all hope that the time spent in his studio will be as productive as the years spent in the classroom with his students. His influence here will be felt in the years to come."

—Debby Aronson

## New science chaos will be explored at memorial lecture

James Gleick, author of *Chaos: Making a New Science*, will deliver the William C. Ferguson Memorial Lecture at 11 a.m. on Feb. 6 in May Auditorium, Simon Hall. His lecture, which is part of the Assembly Series, is free and open to the public.

Gleick, the 1990 McGraw Distinguished Lecturer at Princeton, will speak on "Chaos and Beyond," a look at where the new science of chaos and complexity is going. This new science attempts to find order in turbulence and irregularity, such as the movement of rising smoke or the shape of a cloud, by looking for the hidden patterns behind the turbulence and irregularity and for the conditions that cause these patterns.

In his book *Chaos*, Gleick documents the spread of this new science through the disciplines of physics, chemistry, biology, economics and mathematics. A former science writer for The New York Times, he received both a Pulitzer Prize and a National Book Award nomination for *Chaos*. Gleick is now working on a biography of the late physicist Richard Feynman. He also contributes regularly to The New York Times Magazine.

The Ferguson Lecture honors William C. Ferguson, a former president of Presstite Engineering Co. of St. Louis, who provided for an annual science lecture in his will.

For more information on the lecture, call 889-4620.

## Racism, sexism in the justice system is symposium topic

Racism, sexism and heterosexism in the justice system will be examined during a symposium to be held Jan. 31 and Feb. 1 in Room 316 of the Mudd Law Building. The free and public symposium, titled "Balancing the Scales of Justice," begins at 4 p.m. Jan. 31 and at 9 a.m. on Feb. 1.

The second annual Symposium on Racism, Sexism and Heterosexism is sponsored by the Women's Law Caucus, Gay and Lesbian Law Alliance, Black Law Students Association and the Indian Law Society at the University. Among the issues to be discussed are the effects of race, sexual preference and gender on immigration, family and constitutional law, and reproductive rights.

The symposium speakers will be Richmond, Va., attorney Sa'ad El-Amin, former general counsel and national business manager for The Nation of Islam; Cynthia Gillespie, a writer and lawyer from Seattle, Wash., who served as the first executive director of the Northwest Women's Law Center; Maria Gilde Lamadirid, directing attorney of the National Center for Lesbian Rights and director of The Lesbians of Color Project;

Nell Jessup Newton, a law professor at Catholic University in Washington, D.C.; Nancy Polikoff, a law professor at American University in Washington; Barbara Katz Rothman, a sociology professor at Baruch College in New York and at the Graduate Center of the City University of New York; and Eric Vickers, a partner in the St. Louis law firm of Vickers & Associates and corporate counsel for East St. Louis, Ill.

For more information, call 889-6400.



# NOTABLES

**Milorad P. Dudukovic**, Ph.D., professor of chemical engineering and director of the Chemical Reaction Engineering Laboratory, gave an invited lecture on "Multiphase Reactors: Modeling and Experimental Verification" at the special symposium on "Multiphase Reactors in the Oil Industry," organized by the Institut Francais du Petrole in Solaize (Lyon), France. About 60 invited participants from Europe and the United States attended this symposium and workshop.

**Jay P. Heiken**, M.D., associate professor of radiology, lectured on "CT and MRI of Abdominal Vascular Disease" and conducted a workshop on "Detection of Hepatic Metastases: CT and MRI Techniques and Accuracy" at the 13th annual course of the Society of Computed Body Tomography. He also spoke on "Detection of Hepatic Metastases" and "MRI of the Pelvis" at Northwestern School of Medicine. In addition, Heiken and **Joseph K.T. Lee**, M.D., professor of radiology and director of magnetic resonance imaging, presented an instructional course on "CT and MRI of the Retroperitoneum" at the 90th annual meeting of the American Roentgen Ray Society.

**Raymond L. Hilgert**, D.B.A., professor of management and industrial relations, gave a speech titled "Does Good Ethics Mean Good Business?" at the Fenton Area Chamber of Commerce's general membership luncheon meeting. The fifth edition of his textbook titled *Supervision: Concepts and Practices of Management* has been published by South-Western Publishing Co. He co-authored the book with Theo Haimann.

**Daniel L. Keating**, J.D., assistant professor of law, recently had an article accepted for publication in the winter 1991 volume of the *Wisconsin Law Review*. The article, titled "Pension Insurance, Bankruptcy and Moral Hazard," deals with the issues that arise when a company that files for bankruptcy has an under-funded pension plan. Keating spoke on a panel concerning innovations in the law school curriculum at the annual meeting of the Missouri Bar Association. In that talk, he discussed a new Business Reorganizations seminar that he team-teaches with a federal bankruptcy judge and a partner from a major St. Louis law firm.

## Renowned chemist will give lecture

Fraser Stoddart, Ph.D., Sc.D., professor of organic chemistry at the University of Birmingham, England, will deliver the William M. Louderman Memorial Lecture Feb. 4 at 4 p.m. in Room 458 of Louderman Hall.

The Louderman Memorial Lecture honors William M. Louderman, noted St. Louis businessman, philanthropist and donor of Louderman Hall, which has housed the chemistry department since its construction in 1951.

Stoddart is a synthetic chemist, internationally renowned for his work in macrocyclic chemistry, which involves the construction of very large molecules in the form of rings. His lecture is "Molecular Meccano: Making Molecules to Order." Meccano is a British construction toy; its closest American counterpart is the Erector set.

A 3:30 p.m. reception will precede the lecture. Refreshments will be served in Millstone Lounge, on the bridge between Bryan Hall and the George McMillen Chemistry Laboratory. For more information, contact Chris Carlisle at 889-6576 or 889-6530.

**Samantha Rainwater**, Central Stores manager, was elected president of the Missouri-Iowa-Nebraska-Kansas regional group of the National Association of Educational Buyers at the group's annual meeting held in Lincoln, Neb. Rainwater will host the 1991 regional meeting in Lake of the Ozarks, Mo.

**Anton Schweighofer**, visiting professor in architecture, gave the Graham Foundation Lecture in Chicago. The subject of his lecture was Adolf Loos, an Austrian architect of the early 20th century. Schweighofer, a native of Austria, is chairman of the Adolf Loos Austrian Research Association.

**Frederick Sweet**, Ph.D., professor and director of the Division of Reproductive Biology in the Department of Obstetrics and Gynecology, has been named Member of the Corporation at the Marine Biological Laboratory in Woods Hole, Mass. He also has been named vice president of the Third International Symposium on the Pregnant Uterus, scheduled for May 1991 in Debrecen, Hungary.

**Anatoly Vishevsky**, Ph.D., assistant professor of Russian, presented a paper titled "Creating a Shattered World: Towards a Poetics of Evgeny Popov" at the Conference on Contemporary Soviet-Russian Literature at Texas Tech University.

**Herb Weitman**, director of Photographic Services and adjunct professor in the School of Fine Arts, has a selection of black and white photographs on display from Jan. 31-Feb. 28 at the University of Missouri-St. Louis. An opening reception from 1:30-3 p.m. Jan. 31 will be held in Room 362 of the Social Sciences Building, where the photos are exhibited. The 30 photographs are selected from the 1987 book *Seeing St. Louis*, written by Barringer Fifield, with photographs by Weitman.

## Have you done something noteworthy?

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

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

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

**Contributing writers:** Debby Aronson, Debra Bernardo, Joyce Bono, Kleila Carlson, Gerry Everding, Tony Fitzpatrick, Fran Hooker and Steve Kohler

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## Pollutants —

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levels of ozone with methylchloroform; after all, L.A. is famous for its smog," White adds. "But what's surprising is the consistent relationship between the two, given the reactive species that ozone is. The ozone molecule that you measure at Spirit Mountain is not the same one measured at the L.A. basin because ozone is continually being destroyed and reformed in the photochemical reactions going on in the air masses.

"Conventional wisdom in pollution studies has always suggested that in a remote location far from the source there is not much happening. But we see that things happen very rapidly in the desert. The data show, particularly at Spirit Mountain, that you have pollution fronts coming in. You may have fairly low concentrations of methylchloroform one hour and then much higher ones the next hour. Whether the fronts come in horizontally, that is in puffs of polluted air, or vertically, in layers, is not yet clear, nor is it clear what mechanisms control the rapid changes."

The study's most startling feature is its proof that the halocarbons captured at the various stations come directly from Los Angeles, says Macias.

"There's a lot of excitement about the study because it lets you see direct evidence of Los Angeles pollutants in the desert," he says. "Air pollutants, like those in water, are complicated — they just don't come from one source. In the middle of the desert, it's hard to distinguish between the effluent from Los Angeles and that from Phoenix, Salt Lake City, Tucson — each city has similar pollution sources such as automobiles and power plants. The use of these endemic tracers, which display strong weekday/weekend patterns both at the outlet of the Los Angeles basin and at several locations in the desert, allows the unmistakable identification of air from a specific source: Los Angeles."

Other components of the study that make it attractive to researchers are its relatively low cost and its extensive, versatile data base, Macias adds.

Adds DRI's Hoffer, "Because these tracers are so specific and measured at

very low concentrations, you can trace their flight and find out some things about regional air pollution. We want to know if the L.A. pollution is getting out to the Grand Canyon."

White's quest for confidence in his results led him to conduct an informal survey of Los Angeles area industries to help explain the data he was getting. He consulted data from the Toxic Release Inventory (T.R.I.), a federal program that makes public the relative release amounts from manufacturers of 300 chemicals identified as pollutants. The T.R.I. data identified big users of methylchloroform in the Los Angeles area, many of them aerospace facilities. The informal survey revealed surprises that ultimately illustrated the amazing patterns of halocarbons trapped in the gas chromatographs.

"The observed difference between weekday and weekend levels was so extraordinary that I wanted to make sure that it really was consistent with use patterns, and wasn't some sort of statistical accident or measuring problem," White recalls. "So, I called on some of the people who worked at the big aerospace industries and other manufacturing facilities that we knew were using halocarbons and found to my surprise that, unlike refineries and smelters, they do shut down over the weekend. Some even have gone to a four-day workweek, which may account for a bit of the drop we observe in Friday's concentrations."

The study's impact, White asserts, goes beyond its scientific advances.

"Let's say you live in Los Angeles, and you drive eastward to get away for a few days. You drive through the smog on the freeway and once you get past the mountains enclosing the basin you see it's much clearer. You say, 'I'm getting out of the smog now.' In a few hours, you're at Spirit Mountain, in the middle of nowhere, you've left L.A. far behind. But you haven't escaped the L.A. air. You can't escape it. In this remote place, the composition of the air you're breathing varies according to what was emitted a day or two earlier in Los Angeles. That realization, to me, has a very visceral impact."

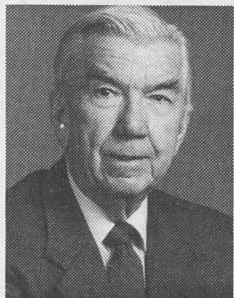
—Tony Fitzpatrick

## Former law Dean F. Hodge O'Neal dies

F. Hodge O'Neal, J.S.D., S.J.D., former dean of the School of Law, died Sunday, Jan. 20, of complications from heart surgery at Sarasota Memorial Hospital in Florida. He was 73.

A memorial service was held at 4 p.m. Tuesday, Jan. 29, in Room 316 of the Mudd Law Building.

O'Neal, George Alexander Madill Professor Emeritus at the law school,



F. Hodge O'Neal

was widely recognized as the leading authority on closely held corporations. He is the author of two legal treatises, *Close Corporations: Law and Practice* and *Oppression of Minority Shareholders*, as well as more than 50 law review articles.

A member of the American Law Institute, O'Neal joined the Washington law school faculty in 1977 as George Alexander Madill Professor of Law and served as dean from 1980 to 1985. He retired in 1988. Prior to joining the University law faculty, he taught at the University of Mississippi, and Vanderbilt, and Mercer and Duke universities. He was the James B. Duke Professor of Law at Duke from 1971 to 1976.

O'Neal also was dean of the law schools at Mercer and Duke and held visiting professorships at New York University, the University of Michigan, University of the Pacific and the University of Florida, where he was the Stephen C. O'Connell Distinguished Visiting Professor.

Born in Rayville, La., O'Neal received a bachelor's degree in political science and a law degree from Louisiana State University in 1938 and 1940, respectively. He received an advanced law degree (J.S.D.) from Yale University in 1949 and an advanced law degree (S.J.D.) from Harvard University in 1954. Louisiana State University inducted him into its Hall of Distinction in 1987.

O'Neal practiced with the New York law firm of Sullivan and Cromwell from 1941-42. He served as a lieutenant in the U.S. Navy from 1942-45.

He is survived by four daughters, Laurie O'Neal of Franklin, Va., Dee O'Neal of Bolinas, Calif., and Nancy and Karen O'Neal, both of Durham, N.C.; two sons, F. Hodge O'Neal III of Monroe, La., and Mark O'Neal of Durham, N.C.; and five grandchildren.

In lieu of flowers, the family has requested that memorial contributions be sent to the Washington University School of Law, Campus Box 1120, One Brookings Drive, St. Louis, MO 63130.



# CALENDAR

Jan. 31-Feb. 9

## LECTURES

### Thursday, Jan. 31

**1:10 p.m. George Warren Brown School of Social Work Lecture,** "Assets and the Poor: A New American Welfare Policy," Michael Sherraden, WU assoc. prof. of social work. Brown Hall Lounge. For more info., call 889-6606.

**2:30 p.m. Dept. of Mechanical Engineering Colloquium,** "1990s Diesel Engines," Alan Gill, chief engineer, Navistar International Transportation Co. Room 101 Lopata Hall. For more info., call 889-6047.

**4 p.m. WU School of Law Second Annual Symposium on Racism, Sexism and Heterosexism,** "Balancing the Scales of Justice." (Lectures also are scheduled throughout the day Feb. 1, beginning at 9 a.m.) Room 316 Mudd Law Bldg. Sponsored by Women's Law Caucus, Gay and Lesbian Alliance at WU, Black Law Students Association, and Indian Law Society. For more info., call 889-6400.

**4 p.m. Dept. of Anthropology Lecture,** "The Anthropological Scene in the '30s and '40s: A View From Chicago," John W. Bennett, WU prof. emeritus. Room 106 Simon Hall.

### Friday, Feb. 1

**Noon. Dept. of Cell Biology and Physiology Seminar,** "Endothelin, Ca<sup>2+</sup> Buffering, and Ca<sup>2+</sup> Localization in Coronary Artery Smooth Muscle," Mike Sturek, U. of Missouri-Columbia. Room 423 McDonnell Medical Sciences Bldg.

**6 and 8:30 p.m. WU Association Travel Lecture Series,** "The Real World of Hawaii and Tahiti," Rick Howard, filmmaker. Graham Chapel. For ticket info., call 889-5212.

### Saturday, Feb. 2

**11 a.m. University College Saturday Seminar,** "Creating Unity Out of Diversity: The Role of Tradition in Indonesia's Legal, Political and Cultural Unification," John R. Bowen, WU asst. prof. of anthropology. Women's Bldg. Lounge. For more info., call 889-6788.

### Monday, Feb. 4

**2 p.m. Dept. of Chemical Engineering Seminar,** "Achieving Intelligence in Process Control Using Neural Networks," Thomas J. McAvoy, prof. and chair, Dept. of Chemical Engineering, U. of Maryland. Room 100 Cupples II. For more info., call 889-6082.

**4 p.m. Immunology Program Seminar,** "Structure and Regulation of a T Cell-Specific Serine Protease," Timothy J. Ley, WU asst. prof. of medicine. Third Floor Aud., Children's Hospital, 400 S. Kingshighway Blvd. For more info., call 362-8748.

**4 p.m. Dept. of Biology Seminar,** "Mapping and Characterization of the Tomato Nuclear Genome," Steven Tanksley, Dept. of Plant Breeding and Biometry, Cornell U. Room 322 Rebstock.

**4 p.m. Dept. of Chemistry Seminar,** "Molecular Meccano: Making Molecules to Order," J. Fraser Stoddart, prof. of organic chemistry, U. of Birmingham. Room 458 Louderman Hall. (Coffee: 3:30 p.m., Millstone Lounge.)

### Tuesday, Feb. 5

**4 p.m. Dept. of Chemistry Seminar,** "Substrate Directed Synthesis," J. Fraser Stoddart, prof. of organic chemistry, U. of Birmingham. Room 311 McMillen. (Coffee: 3:45 p.m.)

**4:30 p.m. Dept. of Mathematics Colloquium,** "Weighted Hardy Spaces," John E. McCarthy, prof., Indiana U. Room 199 Cupples I. (Tea: 4 p.m., Room 200 Cupples I.)

**7:30 p.m. Career Center Lecture,** "Advertising 1991: The Big Issues," William E. Whitney Jr., executive vice president of Ogilvy & Mather U.S. Lecture is in conjunction with the Ambassador Program of the Advertising Educational Foundation. Women's Bldg. Lounge. For more info., call 889-5930.

### Wednesday, Feb. 6

**11 a.m. Assembly Series Presents the William C. Ferguson Memorial Lecture** with James Gleick, author of *Chaos: Making a New Science*. The May Aud., Simon Hall. For more info., call 889-4620.

**11:30 a.m. George Warren Brown School of Social Work Lecture,** "African-American Empowerment Through Multicultural Education," Patricia Brown, director of African-American and Multicultural Education, Indianapolis Public School System. Sponsored by the Society of Black Student Social Workers. Brown Hall Lounge.

**4 p.m. Dept. of Biochemistry and Molecular Biophysics Seminar,** "Towards Accurate Transferable Electrostatic Models for Peptides," Carlos Faerman, Biotechnology Research Institute, National Research Council of Canada. Erlanger Aud., McDonnell Medical Sciences Bldg. For more info., call 362-0261.

**8 p.m. Dept. of English Presents a Fiction Reading** by Lew McCreary, author of *Mount's Mistake* and *The Minus Man*. Hurst Lounge, 201 Duncker Hall.

### Thursday, Feb. 7

**9:30 a.m. School of Medicine Presents the Michael and Irene Karl Lecture,** "Physician, Patient and People," Leighton E. Cluff, prof. of medicine, U. of Fla.-Gainesville. Clopton Aud., 4950 Audubon Ave.

**12:10 p.m. Gallery of Art Talk,** "Carl F. Wimar: Indian Painter," Joseph D. Ketner, director, WU Gallery of Art. Gallery of Art, upper gallery, Steinberg Hall. Lecture is in conjunction with the Carl F. Wimar exhibit.

**4 p.m. Dept. of Chemistry Seminar,** "Conjugated Polymers-Electronic States, Optical Properties, and Conductivity," Bob Silbey, Massachusetts Institute of Technology. Room 311 McMillen. (Coffee: 3:45 p.m.)

**4 p.m. Dept. of Anthropology Colloquium,** "Variation in Intra-household Food Distribution in Response to Nutritional Stress," William Leonard, asst. prof., School of Human Biology, U. of Guelph. Room 101 McMillan Hall.

### Friday, Feb. 8

**Noon. Dept. of Cell Biology and Physiology Seminar,** "How Proteins Enter the Yeast Nucleus," Pam Silver, Princeton U. Room 423 McDonnell Medical Sciences Bldg.

**Noon. School of Medicine Transplant Conference,** "Function and Polymorphism of Class I HLA Molecules," Peter Parham, assoc. prof. of cell biology and microbiology and immunology, Stanford U. School of Medicine. Third Floor Aud., Children's Hospital, 400 S. Kingshighway Blvd.

### Saturday, Feb. 9

**11 a.m. University College Saturday Seminar,** "Reformation, Revolution, and Celebration: The Case of Early Modern England," Derek M. Hirst, WU prof. of history. Women's Bldg. Lounge. For more info., call 889-6788.

## PERFORMANCES

### Friday, Feb. 1

**8 p.m. Edison Theatre "OVATIONS!" Series Presents** "Sound Proof," Keith Terry, body musician. (Also Feb. 2, same time.) Co-sponsored by Dance St. Louis. Edison Theatre. Cost: \$18 for general public; \$14 for senior citizens and WU faculty and staff; and \$9 for students. For ticket info., call 889-6543.

### Sunday, Feb. 3

**2 p.m. Edison Theatre "ovations! for young people" Series Presents** Body Musician Keith Terry. Edison Theatre. Cost: \$7. For ticket info., call 889-6543.

## Campus Y classes range from car care to Chinese cooking

Are you among the countless number of people who made New Year's resolutions to lose weight after munching through the holidays? Without the encouragement and discipline of others, good intentions can fall by the wayside.

Just in time, Washington University's Campus YMCA-YWCA is offering classes to help you trim down, have fun and meet new people. "Workout," a seven-week course, is designed to tone and slim down all major muscle groups.

During the spring 1991 YMCA-YWCA classes, you also can learn everything from maintaining your car to preparing a Chinese dinner.

"Workout," a course for men and women consisting of warm-ups, intense calisthenics and rigorous aerobics, will meet from 8 to 9:15 p.m. Mondays and Wednesdays beginning Feb. 4, in the basement lounge, Myers Hall (formerly I dorm) on the South-40. In addition, a class will meet Tuesdays and Thursdays at the same time and place. After the seven-week course, a four-week extension class will begin April 2 at the same session times.

"Razzamajazz," a seven-week fitness course consisting of stretching exercises, cardiovascular conditioning and intense body toning, will meet twice a week in Umrath Hall lounge. The class, which begins Feb. 4, is offered at the following times: from

### Thursday, Feb. 7

**7:30 p.m. African and Afro-American Studies Program Presents** "A Salute to Black Music and Afro-American Composers," a lecture performance that depicts the lives and compositions of Afro-American composers. Co-sponsored by the Gallery of Art. Steinberg Hall Aud. For more info., call 889-5293.

## EXHIBITIONS

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

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

**"Carl F. Wimar: Chronicler of the Missouri River Frontier."** This is the first comprehensive exhibit on the work of the St. Louis artist in more than 40 years. Wimar was one of the last painters of the Indians and buffalo before the Western settlement after the Civil War. Through March 24. Gallery of Art, upper gallery, Steinberg Hall. Gallery hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends.

**"Romance and Reality on the Frontier,"** in conjunction with the Carl F. Wimar exhibit. Through March 24. Gallery of Art, lower gallery, Steinberg Hall. Gallery hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends.

**"Heritage and Mission: Jewish Vienna."** Through Feb. 22. Hillel House, 6300 Forsyth Blvd. Hours: 10:30 a.m.-4 p.m. Sunday through Friday; closed Saturday.

**"A Temple of Texts: 50 Literary Pillars,"** selected by William Gass, WU David May Distinguished University Professor in the Humanities. Through April 10. Special Collections, Olin Library, Level 5. Exhibit hours: 8:30 a.m.-5 p.m. weekdays.

**"Annual High School Art Competition."** Feb. 3-17. Bixby Gallery, Bixby Hall. Opening reception 3-5 p.m. Feb. 3 in the gallery. Hours: 10 a.m.-4 p.m. weekdays; 1-5 p.m. weekends.

## FILMS

### Sunday, Feb. 3

**7:30 p.m. Hillel House Film,** "God Does Not Believe in Us Anymore," with discussion by Solon Beinfeld, WU asst. prof. of history. Hillel House, 6300 Forsyth Blvd. Free.

### Wednesday, Feb. 6

**7:30 p.m. French Film Series,** "Manon des Sources (Manon of the Spring)" with English subtitles. Room 210 Ridgley Hall.

## SPORTS

### Friday, Feb. 1

**6 p.m. Women's Basketball.** WU vs. U of Rochester. Field House.

**8 p.m. Men's Basketball.** WU vs. U of Rochester. Field House.

### Saturday, Feb. 2

**Noon. Women's Junior Varsity Basketball.** WU vs. Central Methodist College. Field House.

**1 p.m. Men's Junior Varsity Basketball.** WU vs. Florissant Valley Community College. Field House.

### Sunday, Feb. 3

**1 p.m. Women's Basketball.** WU vs. Brandeis U. Field House.

**3 p.m. Men's Basketball.** WU vs. Brandeis U. Field House.

### Wednesday, Feb. 6

**5:30 p.m. Men's Junior Varsity Basketball.** WU vs. McKendree College. Field House.

**7:30 p.m. Men's Basketball.** WU vs. MacMurray College. Field House.

## MISCELLANY

### Wednesday, Feb. 6

**11 a.m. University College Short Course,** "Carl F. Wimar (1828-1862): Chronicler of the Missouri River Frontier," Joseph Ketner, director, Gallery of Art. Cost: \$45 for four Wednesday sessions. For more info., call 889-6788.

### Friday, Feb. 8

**8:30 p.m. Hillel Shabbat Dinner Program,** "Jewish-Christian Dialogue: A Jewish Justification," Rabbi David Novak, prof. of modern Judaic studies at the University of Va.-Charlottesville. Hillel House Lounge, 6300 Forsyth Blvd. (Shabbat Services will be held at 5:45 p.m. A dinner at 6:30 p.m. will follow. Pre-paid reservations are needed for dinner.) For more info., call 726-6177.

### Calendar Deadline

The deadline to submit items for the Feb. 7-16 calendar of the Record is Feb. 1. Items must be typed and state time, date, place, nature of event, sponsor and admission cost. Incomplete items will not be printed. If available, include speaker's name and identification and the title of the event; also include your name and telephone number. Send items to Deborah Parker, calendar editor, Box 1070, or by electronic mail to p72245DP at WUVMC.

course that teaches students how to maintain voice control and speak confidently to a friendly or hostile audience, will meet at the Campus Y from 6 to 7:30 p.m. Tuesdays beginning Feb. 5.

Meditation, a four-week class on relaxation and stress-reduction techniques, will meet from 7 to 9 p.m. Thursdays beginning Feb. 21 at the Stix House.

"Tai Chi," a four-week course scheduled during the lunch hour, promotes relaxation and concentration through slow, dance-like movements. The class will meet from noon to 1 p.m. Tuesdays and Thursdays beginning March 19 in Umrath Hall lounge.

The Campus Y classes cost \$30 for full-time Washington University students, and \$38 for non-students. The "Workout" and "Razzamajazz" extension classes cost \$17 for full-time Washington students, \$22 for non-students. "Chinese Cooking" requires an additional \$15 fee for food costs. YMCA and YWCA members receive a \$5 discount on each class fee.

Class registration must be paid prior to the first class. Registration may be made in person at the Campus Y, or by mailing a check made payable to the Campus Y, Washington University, One Brookings Drive, Campus Box 1076, St. Louis, MO 63130.

For more information, call the Campus Y at 889-5010.