

Washington

WINTER 1990

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ST. LOUIS



MICHELANGELO

Dispelling the Myth of the Lone Genius



David Kilper

Fires in the fall: The autumnal fruits of the euonymus atropurpureus, or burning bush, grace the side of a limestone cliff in the Mincke Valley at the University's Tyson Research Center, located 20 miles west of the Hilltop campus.

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Vol. 60, No. 4 • Winter 1990



Cover: Michelangelo's figure of "Dusk" in the Medici Chapel. The marble sculpture is considered to be among the artist's greatest achievements. Story on page 19. Photo by William E. Wallace.

Essential elements: Washington scientists find the right mix in a program to improve the desperate state of science education in American schools. See page 28. Photo by David Kilper.

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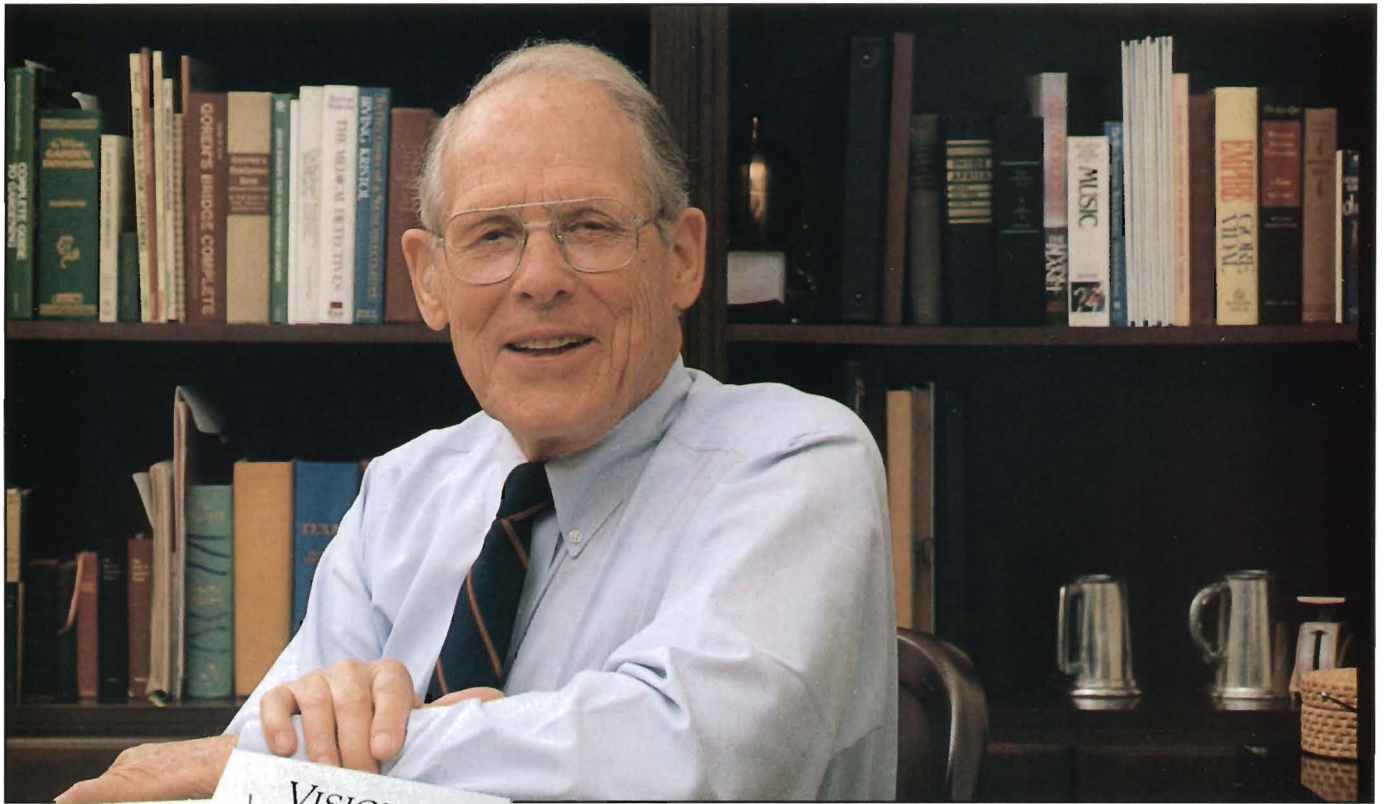
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—Paul O. Hagemann, LA30, MD34

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♦ FRONT ♦ RUNNERS

Alzheimer's Center Awarded \$8.6 Million

The Alzheimer's Disease Research Center (ADRC) at the School of Medicine was awarded \$8.6 million for the next five years from the National Institute on Aging. Announced in September, the funding is a renewal of a \$3.75 million award that established the local ADRC in 1985.

One of 15 ADRCs nationwide, the center at Washington University is directed by Leonard Berg, professor of neurology and director of the School of Medicine's Memory and Aging Project, a long-term study of intellectual function in people 65 and older.

School of Medicine Named National Center for Human Genome Research

The School of Medicine was designated one of the Public Health Service's first four centers of investigation for the federally funded human genome initiative — a project with the goal of deciphering at the molecular level the complete genetic message of human beings.

The designation, announced in October, followed a highly competitive national selection process. A five-year grant with a first-year award of \$2.3 million from the National Institutes of Health will help to establish a new Human Genome Center at the University. David Schlessinger, professor of molecular biology, has been named the center's director.

Other medical schools receiving federal grants are at the University of California at San Francisco, the University of Michigan, and the Massachusetts Institute of Technology.



Warren Knapp/Courtesy of Student Life

Helping the homeless: Students Erika Broaten (left) and Rebecca Nelson volunteer their labors for Habitat for Humanity.

Morning Eye-opener Fixed on Improving Sites

Architecture students have been putting their practical skills to work for the homeless through the "Morning Eye-opener," a student-organized collaboration with Habitat for Humanity International. The program, started last year by architecture graduate Tom Canning, A.B. '90, is comprised of volunteers who help build houses and bring them up to standard codes for the homeless in St. Louis. This year, graduate student Peter Spellman heads the effort.

The program takes its name from the early hour — 8 a.m. — at which time students gather, usually on the weekends, to share breakfast and commence a day of caulking, roofing,

framing, siding, painting, and landscaping. Volunteer turnout for last year's project averaged eight students per week. This year, says Spellman, students from many schools and organizations on campus are getting involved.

Begun in 1976, Habitat for Humanity International has grown to include more than 400 projects in the United States, Canada, and South Africa. The program accepts donations from individuals and corporations to pay for materials and operates on volunteer labor.

Designated the first official chapter in the St. Louis area, the Washington University group will concentrate on improving the College Hill and Adamsgrove communities.

Nightmares: Reliving the Wrath of War

Seemingly well-adjusted Vietnam veterans still have violent nightmares, even 10 or more years after combat, according to a recent study that is among the first to demonstrate that veterans who cope well during their waking lives may still be plagued, while they sleep, by war-related terrors.

Research conducted by Cynthia A. Loveland Cook, assistant professor of social work, focused on 442 Detroit-area males, ages 24 to 41, who had not been treated for psychi-

atric problems. Nearly a quarter of the Vietnam vets reported having frequent nightmares versus 12 percent who did not serve in Vietnam. Violent content tended to permeate the nightmares of many vets who served in Vietnam.

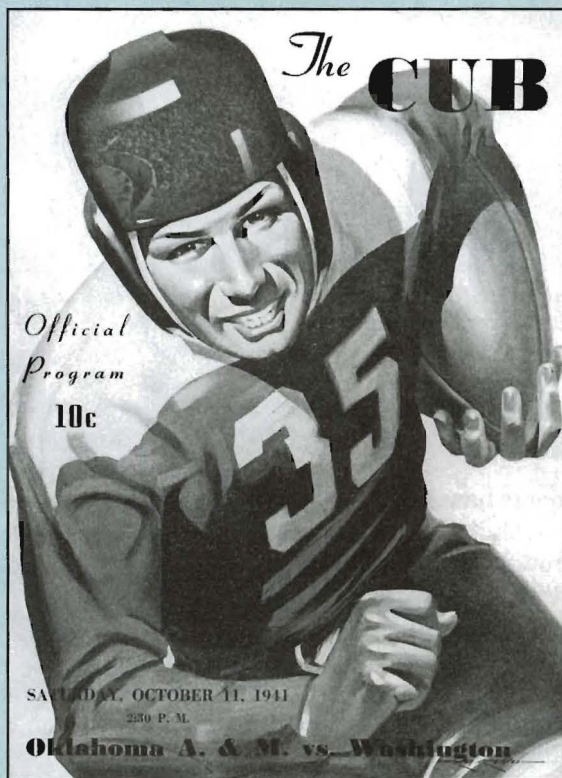
Cook believes that the study of nightmares may provide a psychological window on human adjustment. "Like these veterans, other healthy people who go through trauma — whether domestic violence, child abuse, or rape — may still suffer the fallout years later, particularly in their nightmares."

Magazine Network Debuts

In the summer of 1989, Washington University became one of the founding members of the University Magazine Network. The network consists of nine universities that have banded together to jointly offer advertising in their alumni magazines. In addition to Washington, the members are Brandeis, Carnegie Mellon, Case Western Reserve, Duke, Johns Hopkins, New York, and Rutgers universities, and the University of Pittsburgh. The association is modeled after the Ivy League magazine advertising consortium, which has been operating for nearly 20 years.

Universities, like other magazine publishers, are faced with costs that are rising faster than the rate of inflation, especially the costs for paper and postage. For their magazines, they have taken up such cost-cutting measures as combining publications, cutting frequency, limiting mailing lists to dues-paying members or subscribers, using more economical production techniques or suppliers, and cutting staff.

University magazine publishers have looked at creative ways to add revenue as well, identifying two basic sources: readers and advertisers. Boston University sells *Bostonia* magazine on newsstands while universities such as Notre Dame ask for voluntary subscriptions. After carefully examining the alternatives, *Washington University Magazine* opted to become part of the magazine network, where the combined circulation of the nine magazines, more than 800,000, should prove attractive to advertisers. This decision will in no way detract from the quality and quantity of the editorial matter but should, in fact, allow the magazine to do even more in the future than has been possible with its current resources.



Sensational centennial: 1990 marks the 100-year anniversary of Washington University football. In a 7-3 season this year, the Bears played their best ball since 1966. Highlights of the centennial included a banquet attended by more than 300 alumni, friends, honorees, University and sports officials, and team members, and a special alumni tailgate party held prior to the homecoming game.

Joe Angeles



Making class: Washington students on the move.

Enrollment on the Rise

Washington University's total daytime enrollment for fall 1990 increased by 286 over the previous year and includes a significant rise in minority students. Recently released statistics underscore the quality and diversity of the student body.

This year's total for daytime undergraduate, graduate, and professional students is 9,701, compared to 9,415 last year. Undergraduates total 5,145, including 1,227 freshmen and 173 transfer students. Graduate and professional students number 4,556. Total enrollment, evening students included, is 12,016.

Minorities, particularly Asian-American and African-American students, are well represented in the freshman class. One hundred forty eight first-year Asian-Americans and 100 African-American students are enrolled.

Of the 1,227 freshmen, 62 percent were ranked in the top 10 percent of their high school class. A total of 86 percent were ranked in the top 20 percent. In addition, 68 students are National Merit Scholars. Fresh-

men come to the University from 46 states and 20 foreign countries.

Enrollment in undergraduate programs

	Freshmen	Total
Architecture	48	223
Arts & Sciences	763	2,960
Business	139	570
Engineering	212	458
Fine Arts	65	315

Total enrollments for graduate and professional schools

Architecture	93
Arts & Sciences	1,211
Business	759
Dental Medicine	37
Engineering	695
Fine Arts	35
Law	709
Medicine	466
Social Work	291

Evening enrollments

Architecture Technology	76
Fine Arts Institute	21
School of Technology & Information Management	909
University College	1,247

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Buffalo Head: This charcoal on grey paper, measuring 16 x 10 inches, is one of 70 works by 19th-century painter Carl Wimar (1828-1862) to be exhibited in the Washington University Gallery of Art January 26 through March 24, 1991. Titled "Carl Wimar: Chronicler of the Missouri River Frontier," the show marks the first critical examination of the artist's work in its social and historical context, as well as the first exhibit of Wimar's art in more than 40 years. It is co-organized by the University's Gallery of Art and the Amon Carter Museum in Fort Worth, Texas.



Courtesy of the Saint Louis Art Museum/Gift of Mrs. M. J. Hahn

Diseased Major Organ Removal a Surgical First

A new, minimally invasive surgical technique performed by physicians at the School of Medicine is ushering in a new era of less painful surgery for many patients. Ralph V. Clayman, professor in the Division of Urologic Surgery, recently directed a team of surgeons who performed a laparoscopic nephrectomy, or kidney removal, on a patient suffering from a low-grade renal cancer.

Assisting Clayman were Louis Kavoussi, assistant professor in the Division of Urologic Surgery; Nathaniel Soper, assistant professor of surgery and gastrointestinal surgery in the Division of Surgery; and resident Stephen Dierks.

The technique was done through five abdominal "keyhole" incisions, one into which a laparoscope, a long metal instrument equipped with a

tiny camera lens, was inserted. Guided by a video monitor connected to the camera, surgeons detached the organ by manipulating their instruments via the remaining abdominal cuts. Then, they slipped a nylon sac into the abdomen to entrap the diseased kidney. Drawing the neck of the bag up to the abdominal wall, the surgeons applied an electrical tissue morcellator to fragment the organ. They drew out the tissue with suction and subsequently removed the sac.

Although laparoscopic surgery has been available for a couple of years, it previously had not been used for removal of a major organ. "In this procedure lies the potential to significantly reduce hospital stay, expense, and patient discomfort," says Clayman, "however, more procedures are required before we can set specific qualifications."

Picking Up the PACE

According to physical therapist Kathleen Haralson, people with arthritis can benefit from an exercise program.

Haralson, associate director of the Washington University School of Medicine Regional Arthritis Center, coauthored such a program three years ago and has been instrumental in launching it nationally. Called PACE (People with Arthritis Can Exercise), the community group exercise plan has been adopted by nearly every chapter of the National Arthritis Foundation.

The program, says Haralson, improves the stamina of participants, who also benefit from the camaraderie that develops from group dynamics. "A subtle physical change can mean a big psychological change," she adds.

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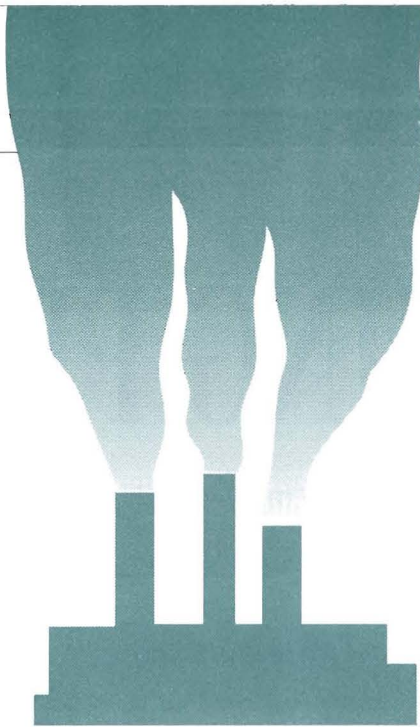
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Air Pollution Expert Reports on National Vista

In a report written for the National Acid Precipitation Assessment Program, a massive federal study of acid rain and related environmental concerns, Professor Rudolf B. Husar reveals that the distance we can see in the United States—our “national vista”—dimmed 25 percent from 1948 to 1983.

The offender? Haze, the end product of pollutants drifting from their sources, with weather patterns, and mixing with other pollutants, fanning out as far as 600 miles. According to Husar, professor of mechanical engineering and a leading expert in air pollution, summer visibility in the Northeast



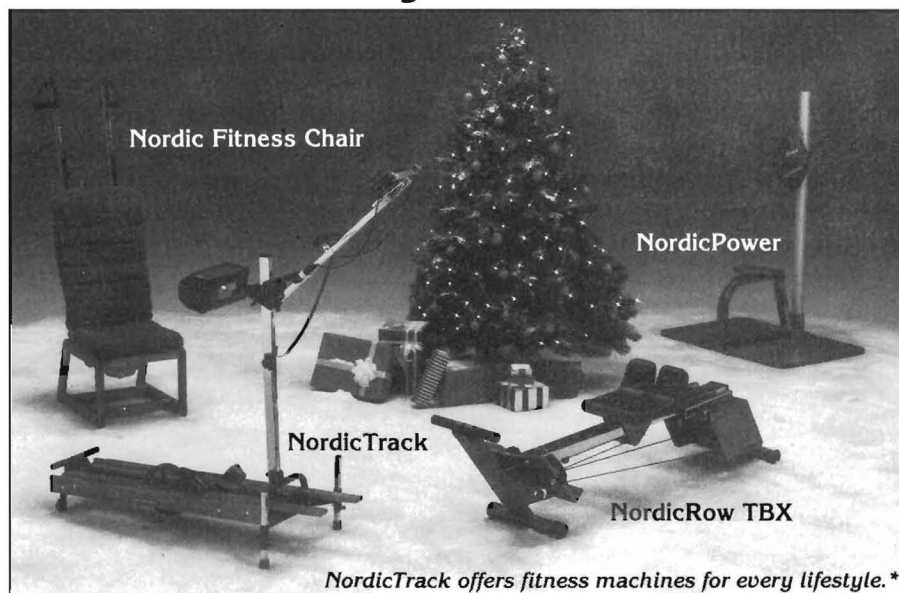
did improve over the same period, however, while visibility in the Southeast declined 80 percent. “On the bright side,” says Husar, “the national visibility problems seem to be improving since the 1970s.”

“Certainly, environmental awareness, and a shift in energy use from coal to oil beginning in the late '60s, were influential in improving the visibility in the Northeast. But energy consumption is a problem in the South, where more coal is burned because of its availability and cheap cost. The population boom in the South, of course, has contributed to that, reflecting one of the oldest laws of pollution studies: people equal pollution.”

Husar’s study illustrates trends in seasonal sulfur emissions combined with haze patterns but does not match specific pollutants with their origins. “The nation will be dealing with the nomadic nature of regional air pollution well into the next century,” he remarked.



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WAGING PEACE

If war can inspire and galvanize society, why couldn't a bloodless crusade against domestic enemies do the same?

by Robert Lowes



Roosevelt's "tree army": The Civilian Conservation Corps (1933-1942) planted more than one billion trees on state and federal lands.

Courtesy of the National Association of CCC Alumni

A World War I recruiting poster gave us a classic American image. A stern, bearded man in a star-spangled hat — otherwise known as Uncle Sam — points a finger in our face and says, “I want YOU for [the] U.S. Army.”

Young men and women still answer the call to arms, but Michael W. Sherraden, associate professor at the University’s George Warren Brown School of Social Work, wonders why Uncle Sam has limited his appeal largely to warfare. If Sherraden had his way, Uncle Sam would tell American youth, “I want YOU...to plant trees...to tutor inner-city children...to nurse dying AIDS patients.”

Sherraden is a leading advocate of non-military service, which refers to young people serving their nation or community in a civilian capacity for one or two years, typically for bare-bones pay. Supporters say non-military service, also called national service, could remedy many societal ills as well as shepherd young people into a purposeful, constructive adulthood — an increasingly difficult challenge.

The United States has experimented with national service over the years, unleashing the Civilian Conservation Corps (CCC) in the 1930s to build parks and the Peace Corps in the 1960s to aid Third World development. Today, momentum is building for a new, more comprehensive form of national service as the United States anticipates beating swords into plowshares during the post-Cold War era, the Persian Gulf conflict notwithstanding. Meanwhile, President George Bush has elevated the role of volunteerism with his call to “a thousand points of light.” Whether Bush’s vision leads to a new CCC, however, is a matter of debate. So, too, is the very subject of national service. Shouldn’t government serve the individual and not vice versa? Hasn’t the history of China’s Red Guard and Nazi Germany’s Hitler Youth taught us the danger of mobilizing young people for state purposes?

Sherraden wants to spur on this debate with a new book, *The Moral Equivalent of War? A Study of Non-Military Service in Nine Nations* (Greenwood Press). He and

If Sherraden has his way, Uncle Sam would tell American youth, “I want YOU...to plant trees...to tutor inner-city children...to nurse dying AIDS patients.”

coauthor Donald Eberly, who helped conceive the Peace Corps, spotlight successes and failures, discover common themes, and describe what sort of plan will best suit the United States. The research made a globe-trotter out of Sherraden. Of the eight countries surveyed besides the United States — Canada, China, Costa Rica, Indonesia, Israel, Mexico, Nigeria, and West Germany — he visited five.

The tone of *The Moral Equivalent of War?* is academic, like that of a 1982 Sherraden-Eberly collaboration, *National Service: Social, Economic and Military Impacts*. However, the authors practice the kind of citizenship they preach. Sherraden’s lifestyle of service began with the example set by his parents, Robert and Madeline Sherraden of Junction City, Kansas. Even while they tended their small grocery store 70 hours a week, they donated blood, delivered meals to the sick, staffed polls on election day, and belonged to church and civic groups. “They volunteered all day long,” says the soft-spoken Sherraden.

While earning his A.B. in social relations at Harvard University in the 1960s, Sherraden helped tenants in a low-income housing project lobby for better living conditions. After graduation, he ran a ranch for emotionally disturbed adolescents in Arkansas for two years.

Today, he sits on his share of professional and charitable boards, including the St. Louis board of the Missouri Association for Social Welfare. On a more intimate level, he recently tutored a young man who’s aiming for his high school diploma.

Sherraden’s coauthor, Don Eberly, is founder and executive director of the National Service Secretariat in Washington, D.C., a one-man clearinghouse and lobby that has kept the words “national service” buzzing in the ears of lawmakers. His commitment to the cause, like Sherraden’s, is highly personal.

“In 1950, I was called up to fight in the

Robert Lowes, A.B.’75, is a St. Louis-based writer and frequent contributor to Washington University Magazine.

Korean War," says Eberly. "I wrote a letter to President Truman and said I recognize my obligation to my country, but that I'd rather teach in Africa. I got a letter from Selective Service saying, 'You don't have that choice, buddy.'"

Eberly made good his vow that if he survived Korea, he would go to Africa. He taught physics, chemistry, and math in Nigeria for seven years. "I was of more use to my country and Nigeria in one month than I was during my whole time in the military," says Eberly.

One contributor to *The Moral Equivalent of War?* is Sherraden's wife, Margaret, an assistant professor of social work at the University of Missouri-St. Louis who earned her Ph.D. in sociology at Washington University. She, too, has paid her dues. As a teenager, she spent a year in Puerto Rico delivering babies and providing day care to farmers' children as part of a community development project.

The premise of Sherraden and Eberly's book comes from a 1910 essay titled "The Moral Equivalent of War" by philosopher and psychologist William James. In this seminal work, James said society should channel its militaristic urges into peaceful pursuits. If war can inspire and galvanize society, why couldn't a bloodless crusade against domestic enemies do the same?

"We must make new energies and hardihoods to continue the manliness to which the military mind so faithfully clings," wrote James, who viewed national service as a rite of passage into adulthood.

While crediting James with bringing a vital issue to the forefront, Sherraden says that his paradigm — national service as the moral equivalent of war — doesn't explain what really happens in the nine countries he surveyed. Besides, "wars are not usually started by hot-blooded young men with aggressive feelings," Sherraden writes. "More often wars are started by methodical old men, driven by long-term interests in security, power, and wealth."

Men and women in their late teens and early 20s, nevertheless, brim with energies that need constructive outlets if they are to

The most ambitious national service program in the United States was the Civilian Conservation Corps (CCC), which relieved the desperate poverty of the Depression and dramatically altered America's landscape.

mature into adults, says Sherraden. Unfortunately, such outlets are few.

"Students are prevented from productive participation in society while they spend years on campuses acquiring degrees, and those not in school are faced with an inhospitable labor market. Industrial jobs are shrinking, so now, if students don't graduate from college, they're at a great disadvantage. They're more likely to be stuck at McDonald's the rest of their lives."

Young people in limbo, he says, tend to get into trouble, and statistics on crime, substance abuse, out-of-wedlock births, and suicides bear that out. "Much of what's wrong is that no one is saying to them, 'We need you.'"

National service, embodying the message that society indeed needs its youth, would replace destructive behavior with constructive behavior. "We're telling young people there are ways you can help out."

Sherraden and Eberly count the ways in their new book. Young men in West Germany have the option of military or non-military service, the latter in fighting fires, making beds in retirement homes, or digging wells in Third World countries. (Nothing is certain about the new Germany, adds Sherraden, but the option will likely remain.) University students in Mexico must perform at least six months of public service before they can earn their degree. In China, a plethora of youth organizations pursue the party line of "serve the people." Sometimes the results are quite visible, such as millions of trees planted along the Yellow River. Sherraden and Eberly, however, came away from China wondering how much of its national service was, in fact, lip service.

The most ambitious example of national service in the United States was the Civilian Conservation Corps. The brainchild of Franklin D. Roosevelt, the popular CCC relieved some of the desperate poverty of the Depression and dramatically altered America's landscape. During its nine-year history, more than 3 million CCC members planted 2 billion trees, built 46,000 bridges, strung 89,000 miles of telephone line, and developed 800 new state parks as well as most of the national parks existing then. In

the process, their health generally improved, many learned to read in CCC evening classes, and they sent \$25 back home to their families every month.

CCC alumni lovingly maintain a national museum in a small brick-and-frame house in a former army camp in suburban St. Louis. There, yellowed copies of the CCC's *Happy Days* newspaper chronicle the heroism of Texans who battled a flood and the martyrdom of those who died fighting a Wyoming forest fire.

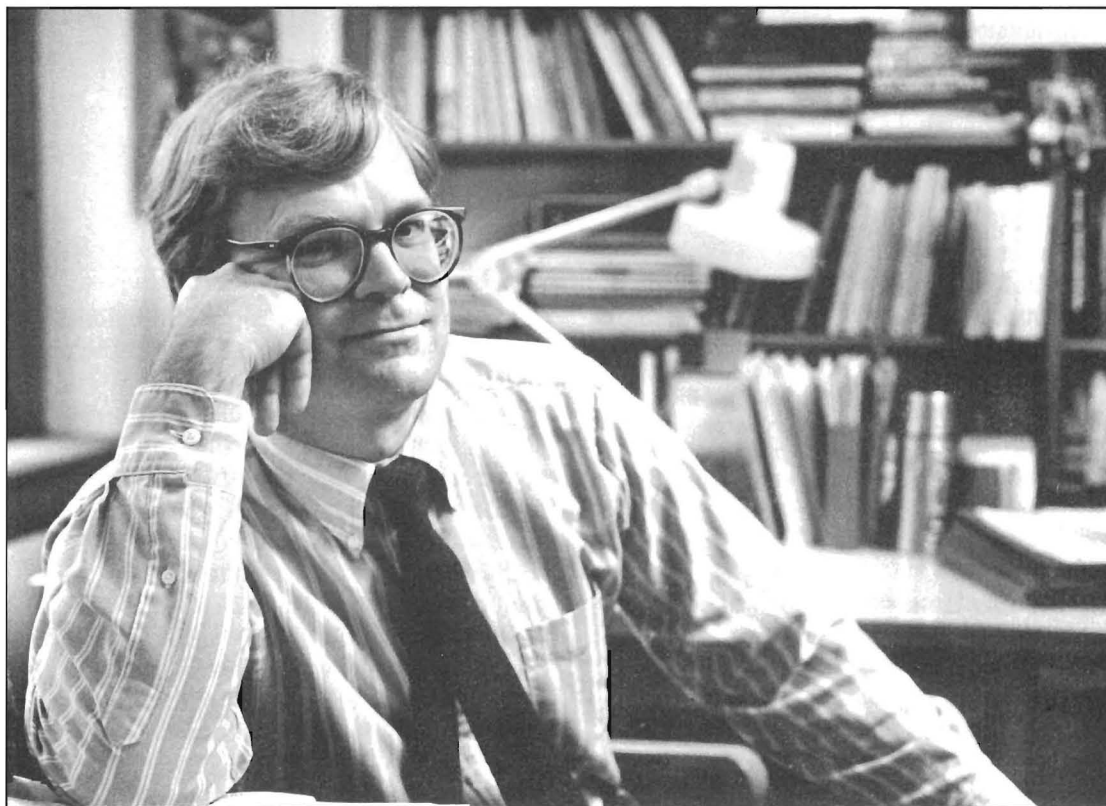
Sherraden and Eberly show that the goals and outcomes (sometimes unintended) of national service vary from country to country. The authors have developed five conceptual categories for comparison:

Productivity is a major theme for most programs, especially those in China and West Germany. Success is measured in terms of meals served, trees planted, miles of road built. Such tangible results capture the public imagination and build goodwill.

In contrast, Canada's now-defunct Katimavik program subordinated the goal of productivity to another one — the commonweal, or more specifically, cultural integration. Canada launched Katimavik, which comes from the Inuit word meaning "meeting place," in an effort to unite the divided French-speaking and English-speaking populations. Katimavik enrollees — men and women from ages 17 to 21 — lived together for nine months, undertaking service projects and receiving room, board, a living allowance, and an honorarium upon graduation. The program operated from 1977 to 1986.

Another strong suit of Katimavik was what Sherraden and Eberly categorize as benefits to participants. Nine months in Katimavik fostered personal development — working as a team, setting goals, and taking responsibility for daily chores.

Benefits to participants in national service also can include education and employment, the latter being an important goal in Nigeria and the United States. However,



Herb Weisman

Michael W. Sherraden

most species of national service don't focus on what the individual may gain.

State interests play a minor role in national service, except in China, where the Communist regime politicizes every individual action. Granted, Indonesia and Nigeria value their university-based youth work as a means of strengthening the central government. And civilian do-gooding in Israel supports military ends, although Israel's state of embattlement tends to blur the distinction between civilian and military anyway, according to Sherraden. But on the whole, he says, the history of national service tends to disarm the legitimate fear that mobilized American youth would become political bullies.

Promoting world peace is a priority for two of the nine countries surveyed. The Peace Corps was chartered partly to promote international understanding. In the case of West Germany, an alternative to mandatory soldiering reflects that nation's desire to break from its martial past.

The country in Sherraden and Eberly's study most likely to have institutionalized "the moral equivalent of war" has not done so. Democracy-loving Costa Rica forgoes an army, air force, or navy. Yet "there is virtually no discussion connecting [national service] with efforts for peace," writes Sherraden.

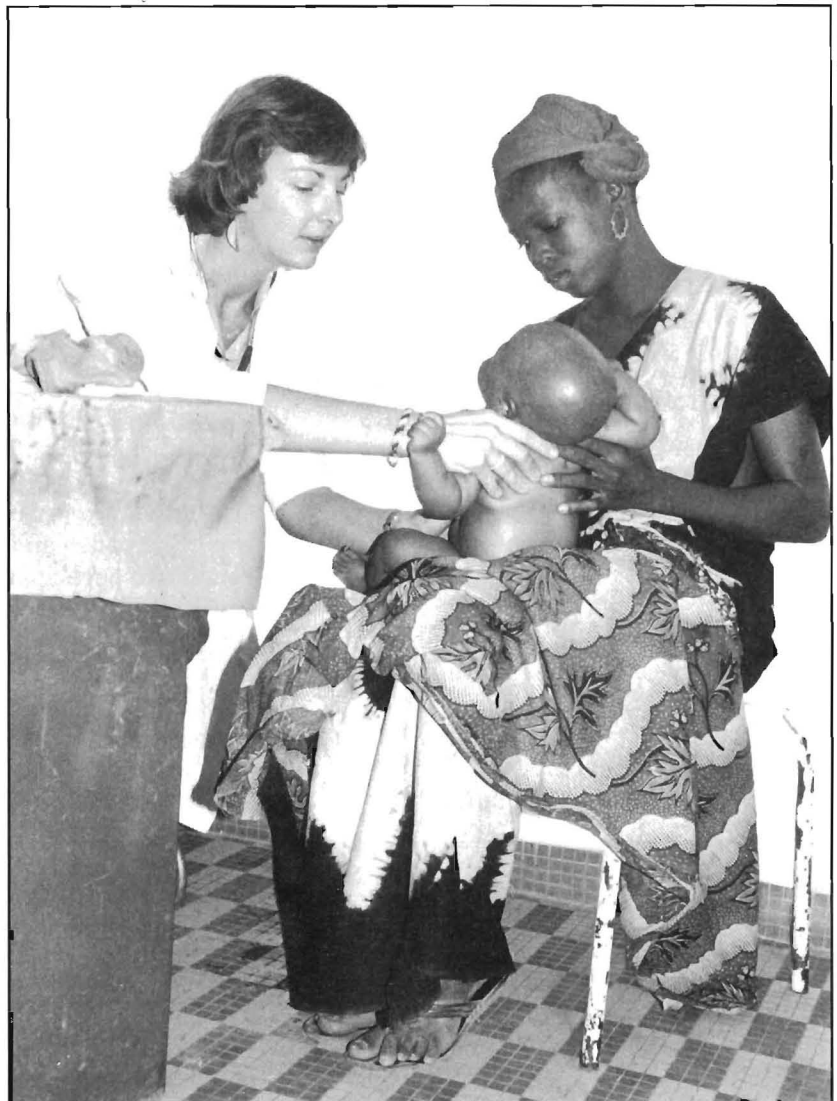
Given the track record of national service here and abroad, how should the United States attempt to raise up an army of good citizens? Sherraden and Eberly propose these guidelines.

- Participation should be voluntary. Compulsory service, Sherraden writes, "is not consistent with American values or traditions."

- A national service program should recruit from all walks of life. Programs targeting only inner-city youth suffer from a small political base and carry the stigma of a welfare program.

- Participants should serve full-time for one year so they and their communities can reap the maximum benefits.

- Ample and stable federal funding is a must. Shoestring budgets, says Sherraden,



Courtesy of the U.S. Peace Corps

Making a world of difference: More than 122,000 Americans have served in the Peace Corps since its inception in 1961. Volunteer Jane Exner, left, of Bel Air, Maryland, treating a youngster at the Centre Medical at Say, Niger, in 1985.

have hamstrung the Mexican and Indonesian programs. A visionary president in the mold of FDR and JFK also is crucial.

- National service should draw upon a diversity of public and private funding, avoid centralization, champion experimentation, and maintain an independent identity. Sherraden credits the high profile of the CCC and the Peace Corps to their status as independent agencies. In contrast, the Young Adult Conservation Corps (YACC) created by President Carter was a bureaucratic appendage of the Agriculture and Interior departments. Most Americans never heard of it.

Sherraden and Eberly have their wish list, but they don't expect their ideal

program to materialize overnight. One might think that they take heart in President Bush's call for "a thousand points of light," but the president's notions on volunteerism strike them as vague.

"A thousand points of light' is an outstanding place to begin, but it needs to be more clearly articulated," says Sherraden. In Bush's rather paternalistic scheme of things, he adds, the affluent condescend to help the poor on their own time and with their own dollars. The poor aren't expected to volunteer themselves.

National service needs the poor, too, says Sherraden, but on a practical level, the only way they can enlist is if they're compensated. Until recently, Bush has rejected the idea, holding to the Republican line that tax dollars, scarce as they are, shouldn't be spent on private-sector responsibilities. Such reasoning lay behind Reagan's decision to kill Carter's modestly effective YACC and veto a bill in 1984 that would have created an American Conservation Corps.

Eberly questions the sincerity of these decisions. "We decided to spend \$500 billion to bail out the savings and loans, so the money was found," says Eberly. The question is, what priority do we give to national service?

The American people apparently give it a high priority. A 1988 Gallup poll showed that 83 percent of Americans favor voluntary national service. When Reagan killed the YACC, several states such as Oregon, Washington, and Pennsylvania continued or revived it on their own. (Ironically, perhaps the most successful state venture, the California Conservation Corps, evolved from an agency that Reagan launched as governor of that state.)

The image of young people patriotically rolling up their sleeves also has captivated Congress. At one time in 1990, Capitol Hill was pondering some 20 bills related to national service. Several proposals finally merged into a Senate bill—dubbed the National and Community Service Act—that would have provided \$125 million in grants for state service projects. The measure passed in a 79-18 vote in March despite

If Washington fails to act, says Sherraden, the most realistic hope for national service may lie in the grass-roots momentum of state and local efforts.

opponents prophesying another wasteful bureaucracy and a bigger federal deficit.

In September, the House approved a similar bill. Wary of a presidential veto, House and Senate conferees bit the budget bullet and crafted a final national-service proposal that would cost only \$62 million in its first year. The measure calls for some full-time participants to receive living stipends as well as vouchers applicable toward college tuition. Others would receive two years' worth of scholarships in exchange for three years in the Peace Corps or VISTA (Volunteers in Service to America). Bush signaled that he was finally willing to accept the notion of compensating volunteers; at press time, he was expected to sign the compromise bill.

Sherraden views the legislation as a sound, if not stellar, start. Such a piecemeal arrangement, in which the federal government funds and coordinates a constellation of state and local efforts, may be the most realistic hope for national service, he says. The old, monolithic CCC with its happy foresters stirs the imagination, but the nation may not have the will or the cash to duplicate it. Plus, the call to service in 1990 lies primarily in America's cities, not its forests.

However, the state of crisis that gave birth to the CCC is still with us, Sherraden says. So many elements of society are ailing — health care, education, the environment, the inner city. National service can focus on any number of well-defined problems.

There's another compelling reason for national service. Deep chasms split this country racially and economically. "Kids need some experience to introduce them to diversity, to broaden their vision of other ethnic and income groups," says Sherraden.

He believes that a system of national service in which suburbanite and urbanite toil side by side could achieve the kind of cultural integration that Katimavik strove for in Canada. It would be a "mechanism that unites us." Such a hope keeps Sherraden working for the day when a new Uncle Sam poster beckons young Americans to do their peaceable duty. ■

The Wizards

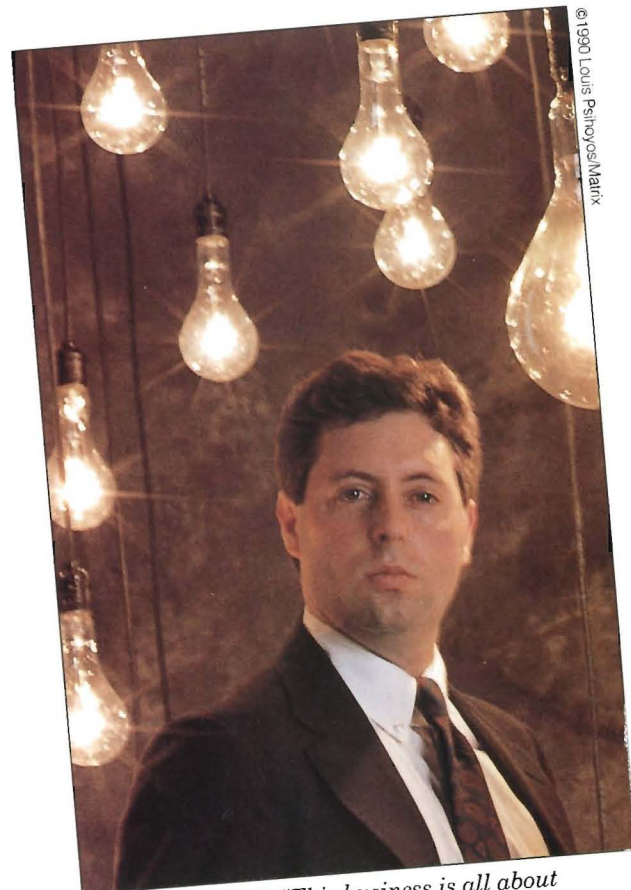
Step into the offices of two New York advertising executives to learn what separates these creative operators from the rest of the madcap pack. *By Ambrose Clancy*

Sometimes the simplest advice is the most telling. A few years ago, William Tragos, head of the international advertising agency TBWA, hosted a Washington University "send off" at his home in Connecticut. The affair was held to acquaint enrolled freshmen and their parents with current students and alumni. Among the Washington graduates from the New York metropolitan area was Jonathan Bond, a young man working in advertising. Needing advice, he sought out Tragos at the party. Bond had considered starting his own firm with his partner, but wanted to hear what Tragos had to say. "Go ahead," the older man said, in his straight-ahead, no-nonsense style. "You'll make a fortune."

Bond, relating the anecdote, lights up. In the wild, hundred-mile-an-hour world of New York advertising, it is a touching moment.

Being early for an appointment at Kirshenbaum & Bond is unlike other New York business experiences. Instead of killing time in overpriced coffee shops, or walking around a block shoulder-to-shoulder with other pedestrians, one can sit in a tree-shaded park in front of 145 Sixth Avenue, on the western edge of SoHo, New York's gallery district, and take in the eccentric street life of the area. While elderly men play intense chess games amidst the cocky pigeons, two young men work on the engine of an old junker, the radio blaring salsa. A bicycle messenger in a kamikaze headband shoots through the park and exits into the avenue, pedaling madly against the traffic, narrowly missing a bright yellow flatbed truck holding 20 Hare Krishnas.

The building off Sixth Avenue is the perfect place for Kirshenbaum & Bond, the firm called the "ad brats" in "the world's hippest office." K&B brought you the No Excuses Jeans ad with Donna Rice—"I make no excuses. I only wear them." And Joan Rivers—"It was a toss-up between me and Lady Di. Obviously, the real princess won." For Kenneth Cole shoes, their first client, they wrote, "Imelda Marcos bought 2,700 pairs of shoes. She could have at least had the courtesy to buy one of ours."



Jonathan Bond: "This business is all about instinct. You either have it, or you don't."

of Ads

Humor, audacity, and a sense of shamelessness, claimed one writer, is what put the firm in the spotlight.

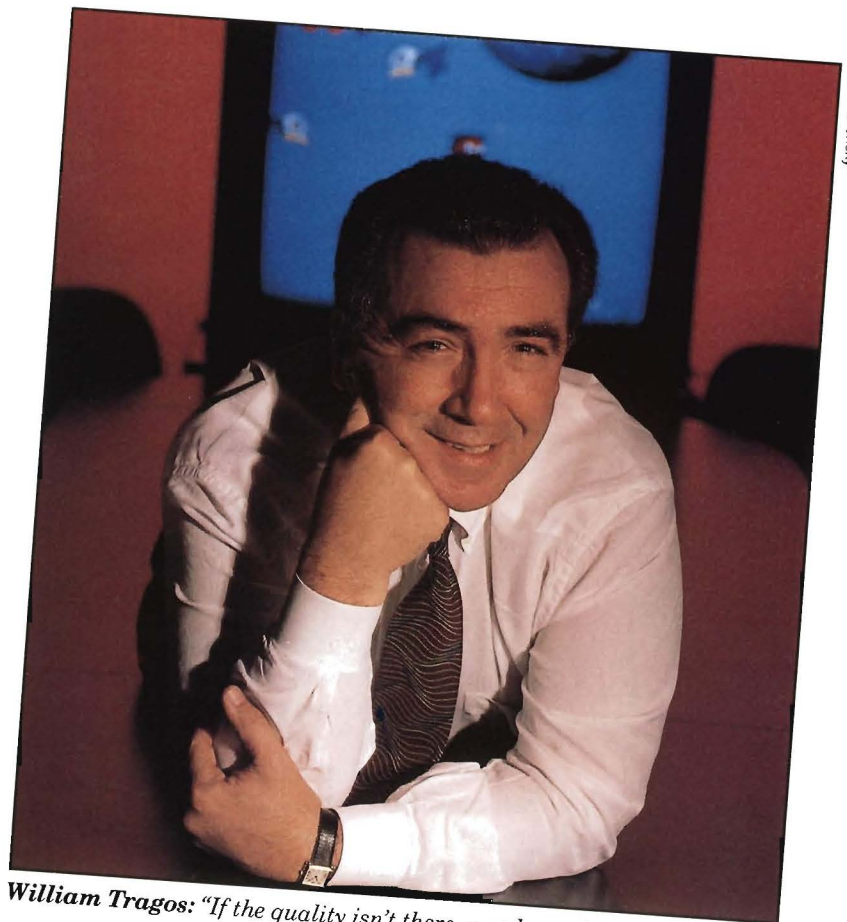
The receptionist sets the tone. She is pretty, stylish, and most of all, *young*. (The median age of the employees is 28.) Asking you to have a seat and wait, offering you coffee, or use of a phone, she delivers words in the tone of an actress rehearsing lines; what should be stressed, should I speak it fast or slowly? A young man cruises in from the offices to reception on a bicycle, and she hands him phone messages. As he pedals out, she answers the phone, ringing changes on her voice at each sentence.

Executive secretary Linda Caso seems to be the one serene soul in an office of people acting as if their hair were on fire. Asked if this is the world's hippest office, she says, "I don't know about hippest. Most frenetic, yes." She seats you in a chair in front of a desk piled with paperwork and a pint glass holding pencils.

Jonathan Bond enters the office nearly running. His delivery is rapid-fire, cordial, hurried. He is a small, lively, fit, and supremely confident man of 32, sitting behind his desk, his shoes stacked on the paperwork. It is not hard to believe that here is a man who runs a staff of 40 people and presides over a business that exceeds \$30 million in billings. Your chair is lower than his, a trick that seems the only phoney thing about him. And after a while, you begin to think it's not a trick at all, but an accident. He's a man to whom you want to give the benefit of the doubt.

Born and raised in Manhattan, Bond enjoyed his years at Washington University. "It was a good idea to get out of New York, to get away from a New York perspective. And I really loved the school. But why did St. Louis wait until I left to start all those great restaurants and all those good gyms?"

"My education was good for *me*; I don't know if it has ever helped me in advertising.



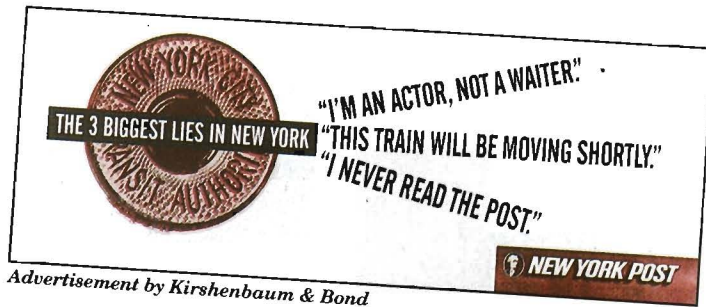
Frank Veronsky

William Tragos: "If the quality isn't there, people won't buy it."

This business is all about instinct. You either have it, or you don't. And the more experience you have, real experience, the better your instinct, your feel for the right way to go. Like hitting a tennis ball well, you don't think about it, it just happens. But all those complex muscle movements are *learned* by doing it over and over. When the time comes, wham! It just happens."

For someone so young, his experience in the business is remarkable. In his early twenties, he worked at Jordan, Case & McGrath, then moved on to Korey, Kay & Partners (where he met copywriter Richard Kirshenbaum). Before starting his own firm three years ago, Bond was vice president of

Ambrose Clancy is a journalist and novelist based in New York. His forthcoming book, *The Night Line* (New Amsterdam Books), centers on New York nighttime cab drivers.



Advertisement by Kirshenbaum & Bond

“Being creative requires more discipline, more control over what you’re doing.”

Jonathan Bond

account services at Sacks & Rosen. Wanting to work for themselves and to put their ideas on the market with nothing but ego, confidence, and Tragos’ advice, Kirshenbaum and Bond persuaded Kenneth Cole to take them on. They created the Imelda Marcos ad followed by others, including one picturing Manuel Noriega with the copy, “One heel you definitely won’t find at our semi-annual sale.”

“The first few clients,” remembers Bond, “when we’d bill them and they were a little late, we’d say, ‘Come on, this is our bar mitzvah money.’”

They are still a small agency, but they’re hot, considered by the industry to have the creative edge. They no longer have to be outrageous and have captured some impressive clients including Bear Stearns brokerage and banking business, Chase Bank, the *New York Post*, *Metropolitan Home* magazine, Savin Copiers, and Guinness Import Company, among others.

“Advertising is about image,” Bond says. “And our image has been small and crazy. The thing about image is to be consistent, and we are. We’re a creative agency; that’s what got us on the map. Now that we’re here, we have to make that image acceptable to bigger companies, to let them know that creative doesn’t mean a lack of discipline. Being creative requires more discipline, more control over what you’re doing.”

Although their press has been mostly good, some writers have chided them for being “just another flash in the media pan,” and “too hip to live.”

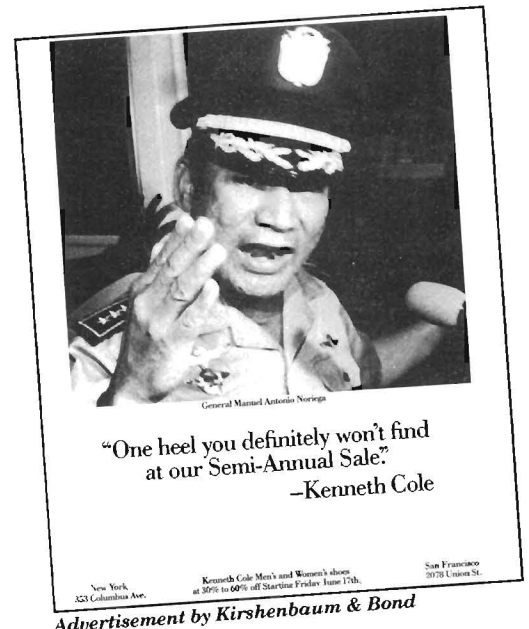
How does Bond feel about those claims? “Advertising is now like the movies or the theater. You’re being reviewed constantly. Like I said before, the idea is consistency. To tell you the truth, I don’t really care what they write. Writers really have no idea what

advertising is all about. I’ve never learned a damn thing from them. But,” he smiles at the writer, “I’d never tell them any of this.”

Portrait of a happy man. Married, with a two-year-old child, a home an hour away in New Jersey, Jon Bond is right where he wants to be. “I didn’t get into the ad business for money. No, that’s not true, sure I did. But what really got me was the glamorous aspect of it. If you want to just make money, go into the lead pipe business. Money, but no fun.”

He’s asked about William Tragos and relates the anecdote about seeking his counsel. He pauses and reflects for a moment, a startling state of affairs in someone so quick. “Bill Tragos is someone I really respect. He’s one of the top 30 advertising men in the world. Give him my regards.”

Uptown, at the classic advertising address, Madison Avenue, on the 11th floor of an office tower, you are early again. An attractive, middle-aged receptionist asks you, in a clipped British accent, to wait. Here, all is quiet. The walls are white, the carpet gray, and one has the feeling that beyond reception, in the halls and offices, money is quietly being printed. Over the receptionist’s head are block letters: TBWA New York Paris Milan Frankfurt London Madrid Zurich Brussels Amsterdam St. Louis Rome Dusseldorf Hamburg Barce-



Advertisement by Kirshenbaum & Bond

The burnout rate is higher for those living life in the ad lane, Tragos wryly observes. "More and more people are realizing the excruciatingly painful task of selling hot air."

Busch, Ralston Purina, Olin Corp., Evian water, Western Union, and Monsanto. Their signature ad these days is the Absolut vodka print campaigns. They have also reunited "The Odd Couple" of Tony Randall and Jack Klugman to pitch Eagle Snacks.

What has being the son of immigrants given him?

Without a pause, "Courage. You're raised by people who have made an incredible journey. And I'm not just speaking geographically. Professional people who leave it all behind and work as laborers to start anew. To take slights and bigotry and keep going, keep tradition alive for their children. My grandfather had a little store in Savannah, Georgia, that was burned to the ground by the Klan at the turn of the century. But you keep pushing. You don't know what tomorrow will bring, and in a way that is a blessing. So the kid has a burden, the burden of tradition to live up to, and that's what drives him. A poet wrote in 252 B.C. that the Greeks took Troy because they never stopped trying."

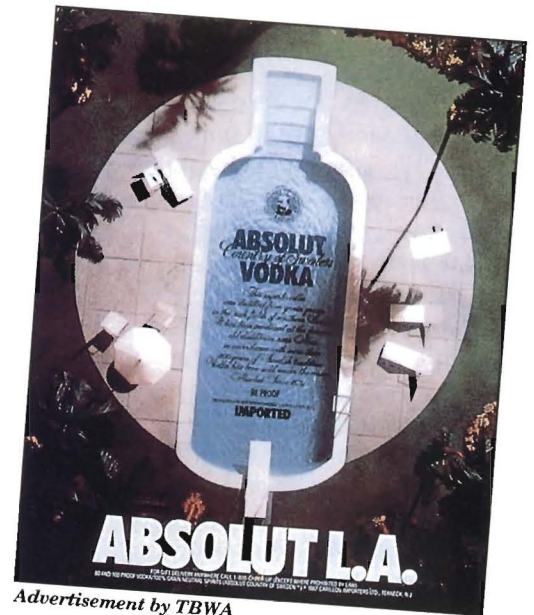
How has the industry changed?

"The biggest change is probably the emergence of women as key players in the business. Thirty years ago that wasn't a factor. And also, like I said before, it's not a business people play at anymore; it's become much more competitive. The burnout rate is higher. I mean, more and more people are realizing the excruciatingly painful task of selling hot air." Tragos produces a wonderfully wicked smile.

Is there anything he wouldn't sell?

"As long as it's legal, and they pay me, I'll sell it. You know, the whole ethics idea in advertising is blown out of proportion. There's an assumption that you can pull the wool over people's eyes, but you can't. The American public is a lot smarter than people realize, so advertising has to be smart. I think it comes from our frontier history, the wild west experience, where people were exposed to a lot of snake-oil salesmen. As advertisers, we can't just add sizzle to a steak. If the quality isn't there, people won't buy it."

How much has sophisticated marketing research changed advertising?

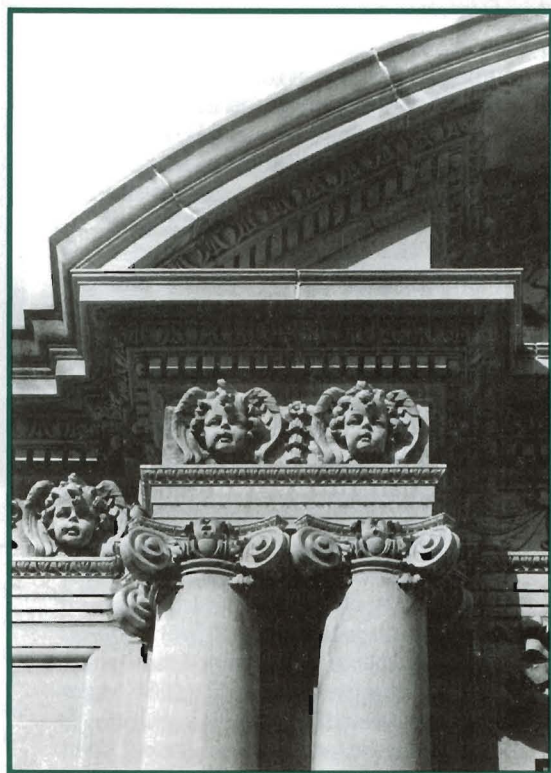


"A lot. But after a while, and up to a certain point, you have to realize that a lot of research is voodoo. In this business you can never forget that the real television experts are the consumers. Hell, they watch TV an average of four hours a day, day in and day out. They understand the medium better than any of us. And you can't get wrapped up in the idea that advertising is something noble, that we're in the information business. That's phoney baloney. We're in the selling business. We have to entertain. We have to magnify the difference between products. And if what we're selling doesn't stand up to that magnification, people won't buy it. Simple as that."

To most, the way Tragos works would seem killing. He lives on airplanes, spending one week a month in Europe, three days a month in St. Louis, other days in Chicago or on the West Coast, the rest in New York. "But my schedule isn't as bad as it sounds," he claims. "For some reason, I've found that I'm at my best, I can think the clearest, on an airplane. Really, I have a feeling it's something in the air they pump into planes," he smiles. "If I could just figure out what it is."

Another happy man, it would seem. Happy not to be satisfied. Someone pleased to be in a battle, testing himself daily. One remembers his remark about being finished, while Jon Bond is just beginning.

Impossible. ■



 **Washington**
WASHINGTON · UNIVERSITY · IN · ST · LOUIS

ANNUAL REPORT
1989-1990

Remarks of the Chairman

During the 1989-90 academic year, there were four meetings of the full Board of Trustees and over 100 meetings of its formally constituted committees. In addition, Board members served on National Councils, undertook special projects, met with students, inspected properties, advised on projects, and performed other services for our great university. I have never served with a more dedicated group of individuals. Their contributions of time and talent to the common enterprise could not be purchased at any price. It is an honor and privilege to chair this able group.

The contributions and achievements of our teacher-scholars during the past year, highlighted in this report, represent a continuation of the ideas, discoveries, and solutions to the kinds of problems to which the University's faculty has been dedicated over the years. The devotion to teaching and the scholarly productivity of our distinguished faculty members have earned them well-deserved respect and recognition throughout the nation's academic communities.

Throughout the year, our students demonstrated both their commitment to learning and their earnest concerns for justice and fairness on the campus and in the greater society. Our graduates are proof that Washington University educates people willing to take on difficult challenges; many of our graduates will be among society's future leaders.

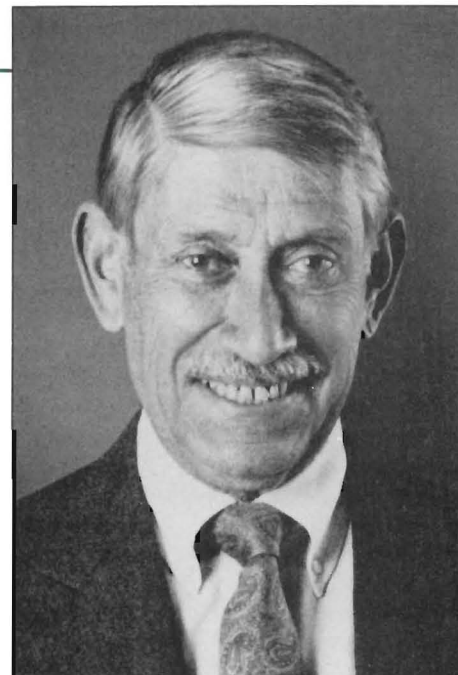
Facilitating the exchange between teacher and student—central to the University's mission—are administrators and support staff who gather, maintain, and employ the institution's resources efficiently and wisely. They are a skilled and loyal group whose participation in the University's work often occurs without notice and acclaim. Three key members who have worked closely with the Board of Trustees departed the central administration on June 30. Herbert F. Hitzeman, Jr., senior vice chancellor for university relations, and Joe F. Evans, associate vice chancellor for business affairs, have retired after 24 and 36 years of service, respectively. Ronald G. Evens, M.D., who served as vice

chancellor for financial affairs for two years, has returned to his full-time duties as director of the Mallinckrodt Institute of Radiology and Elizabeth E. Mallinckrodt Professor and head of the Department of Radiology at the School of Medicine. Both Hitzeman and Evans have had major roles through many years of change and progress, and Evens brought exceptional skill to his interim service.

The Board and I will miss working with these individuals, who were especially helpful to the Trustees during 1989-90, a year in which campus facilities and space were a chief concern. The past year saw the completion of the new library at the School of Medicine and Harold P. Jolley Hall at the School of Engineering, the construction of two new residence halls, and the completion of arrangements to acquire the Famous Barr building and property in Clayton. The latter site will enable a partial solution to the problem of limited administrative office and parking space on the Hilltop Campus.

The terms of seven Trustees ended during the year. Katherine White Drescher and Michael N. Newmark, partner in the law firm of Gallop, Johnson & Newman, St. Louis, left the Board last fall. Those whose terms ended at the spring meeting are: John R. Barsanti, Jr., partner in Armstrong, Teasdale, Schlafly, Davis & Dicus, St. Louis; Charles F. Knight, chairman, president, and chief executive officer of Emerson Electric Company, St. Louis; Charles Lipton, chairman of the board, Ruder-Finn, Inc., New York; William P. Stiritz, chairman and chief executive officer, Ralston Purina Company, St. Louis; and Raymond H. Witcoff, president, Transurban Corporation, St. Louis. Each of these individuals contributed something special to the deliberations and work of the Board. I thank them. I am confident they will stay interested and active in the affairs of the University.

Three former Trustees were re-elected at the spring meeting, and four new Trustees were elected during the year. Rejoining the Board are: David C. Farrell, chairman and chief executive



Lee M. Liberman

officer, The May Department Stores Company, St. Louis; Richard F. Ford, managing general partner, Gateway Associates L.P., St. Louis; and Louis S. Sachs, chairman and chief executive officer, Sachs Electric Company, St. Louis. Elected at the fall meeting was John K. Wallace, Jr., chairman and chief executive officer, Imperial Products Corporation, St. Louis. Jack C. Taylor, chairman, Enterprise Leasing Company, St. Louis, was elected at the winter meeting. New Trustees elected in May are Thomas H. Jacobsen, chairman, president, and chief executive officer, Mercantile Bancorporation, Inc., St. Louis, and Edward E. Whitacre, Jr., chairman and chief executive officer, Southwestern Bell Corporation, St. Louis. The Board welcomes the new members and welcomes back the reelected former Trustees.

Finally, Elliot H. Stein, chairman emeritus, Stifel Financial Corporation, and William K. Y. Tao, founder, William Tao & Associates, Inc., both of whom have given long years of devoted service to the University, have been named Emeritus Trustees. My congratulations to both.

Lee M. Liberman
Chairman
Board of Trustees

Comments by the Chancellor

This Annual Report covers the recent past, the happenings of the academic year 1989-90. The interested reader, I believe, will find much to suggest a vital academic community with the financial and physical infrastructure in very good shape. My comments will focus on a few new initiatives and the continuing challenges they are designed to address.

Recently, Provost Edward S. Macias announced the formation of a Teaching Center, which will be directed by Professor Robert McDowell. This center will serve faculty and graduate students who wish support in assessing and improving classroom performance. For example, videotaping will be available so that faculty members can see themselves as others do. In addition, seminars will be held relying on excellent teachers who can be helpful to other faculty and graduate students. No one is more experienced in the ways of Washington University than Professor McDowell. He will continue his consultations as the work of the center evolves.

Also, a major effort to upgrade and improve classroom facilities was started under the leadership of Professor and Associate Provost Gerhild Williams. These two actions underscore the central focus on the life of the mind and especially the educational mission of the University.

Since its founding, Washington University has been concerned with the moral, social, and physical development of the entire student as well. As we have grown and become increasingly specialized, students interact with more individuals than in the past. There are more faculty and more advisers; there are physicians and nurses, career counselors, academic counselors, and other specialists who are prepared to address various needs of students, especially undergraduates. The challenge is to provide the best possible support for each individual. The pitfalls are fragmentation, confusion, and frustration. The challenge is to make certain the entire person is central and that the total experience is coherent.

Coherence is important also for Washington University. Provost Macias is chairing a committee on Washington University in the 21st century. This committee has been asked to look at the University as a whole rather than as a collection of separate enterprises in order to develop a vision to lead us into the next century.

The work of this committee is a reminder of the importance of planning carefully so that our individual programs make sense for the entire academic enterprise and so that the whole is greater than the sum of the parts. No institution, certainly not a small institution like ours, is large enough to cover all fields in depth.

I recently heard an estimate that the amount of information available to the human race doubles every 18 months. I do not know if that estimate is near the mark, but the fact that sensible people might think so helps to explain the increasing specialization needed in order even to attempt the scramble to keep abreast of change. Narrow fields may become even more narrow. It also explains the need for a liberal education broad enough to prepare individuals to weigh, balance, and make sense of the mass of information that threatens to engulf us.

Late in the academic year, Washington University acquired, partly by purchase and partly by a generous gift from The May Department Stores Company, approximately 495,500 square feet of land (11.3 acres) and more than 350,000 gross square feet of floor space in nearby Clayton and University City. The property is 0.7 miles west of the Hilltop Campus. This property, currently occupied by Famous Barr, will come to us in late 1991 or early 1992.

There are both short- and long-range reasons for this land acquisition. The long-range look was compelling. Washington University is running out of land. The purchases of land by Robert Brookings and by Adolphus Busch in the early part of this century have served us well, but increasingly the density of buildings has grown, and green space has been turned into asphalt as cars seem to multiply. The basic architectural plan of the



William H. Danforth

University precludes high-rise structures in the central part of the Hilltop Campus. The attractive adjacent neighborhoods, which add so much to the ambience, preclude easy expansion. This new acquisition will provide space for expansion for many years to come. There are no current specific plans for expansion, but if the past foretells the future, it is likely that this space will be well-utilized at some time.

Despite the long-range need, it would have been difficult to justify the purchase without near-term purpose. The lower floor of the Famous Barr store building will provide much-needed storage space for library materials. When this transfer takes place, the renovation of the John M. Olin Library, now being planned, will provide improved working space for students, faculty, and staff. In addition, some of our computer services can easily move to the Famous Barr property. Finally, the new land contains parking facilities which, with shuttle service, will help us to avoid a \$9 million parking structure on the north side of the campus. I am very pleased with the arrangements and grateful to The May Department Stores Company.

The School of Medicine, in partnership with Barnes Hospital, is planning an approximately 600,000-square-foot outpatient and office facility. This building reflects both the historic partnership with

Barnes Hospital and the increasing importance of providing integrated care and clinical teaching in an outpatient setting. This undertaking will undoubtedly be the largest construction project with which we have yet been engaged.

Finally, those of my friends and colleagues who are retiring or about to retire, notably Senior Vice Chancellor Herbert F. Hitzeman, Jr., Associate Vice Chancellor Joe F. Evans, Dean M. Kenton King, Dean James M. McKelvey, and others, leave Washington University in very good shape, indeed. Their contributions to this venerable, but ever young, institution will be lasting.

To them and to all who have made this last year so successful, I send my thanks and the gratitude of Washington University.

William H. Danforth
Chancellor

Selected Highlights of 1989-90

Scores of distinguished visitors enriched the intellectual climate of the campus during the academic year and a broad array of happenings may serve as benchmarks by which others judge Washington University's standing as a leading independent institution providing teaching, research, and service.

The School of Medicine was named one of only seven centers nationwide in which patients can receive allogenic bone marrow transplants under the Institutes of Quality program of the Prudential Insurance Company. The program is designed to guide patients to institutions with superior records in high-tech medical treatments and overall high-quality medical care. The School of Law celebrated the 120th anniversary of the admission of the first women to a chartered law school in the United States. Lemma Barkaloo and Phoebe Wilson Couzins enrolled in Washington's law department in the fall of 1869. The University's Gallery of Art, cited as a "university art museum at its best," received accreditation from the American Association of Museums. Only 680 of 6,000 museums nationwide have been accredited. The Minority Youth Entrepreneurship Program,

sponsored by the John M. Olin School of Business and the Urban League of Metropolitan St. Louis, was awarded the esteemed Leavey Award for "Excellence in Private Enterprise Education" by the Freedoms Foundation of Valley Forge.

Faculty Honors

Viktor Hamburger, Ph.D., Edward Mallinckrodt Distinguished Professor of Biology Emeritus, received two of the nation's highest honors in science within six months. President George Bush presented the pioneering biologist the National Medal of Science in ceremonies at the White House. Then the American Philosophical Society presented its 1990 Karl Spencer Lashley Award to Hamburger, whose scientific contributions over six decades are recognized as fundamental to many major developments in neurobiology and embryology. Howard Nemerov, who ended two years as Poet Laureate, was honored by the University community on May 29 with a reading of his verse by nationally known poets. The event also marked his appointments as Edward Mallinckrodt Distinguished University Professor of English Emeritus and Distinguished Poet in Residence.

Gerald D. Fischbach, M.D., Edison Professor of Neurobiology and head of the Department of Anatomy and Neurobiology, was elected to the prestigious Institute of Medicine of the National Academy of Sciences, bringing to 17 the current number of University faculty named to that body. Patty Jo Watson, Ph.D., professor of anthropology, was awarded Honorary Life Membership in the National Speleological Society, an honor given only 28 individuals in the 8,000-member society's 48-year history. She also received the 1990 Fryxell Medal from the Society for American Archaeology, for her contributions to uncovering the human past in the Americas. Robert H. Salisbury, Ph.D., Sidney W. Souers Professor of American Government and chairman of the Department of Political Science, has been awarded a Guggenheim Fellowship for his work on "American Pluralism in Theory and Practice." Stuart A. Kornfeld, M.D., professor of biological chemistry and medicine, was the 1989 Harden Jubilee lecturer and medalist, an honor given by the British Biochemical Society to a biochemist of international distinction.

Kenneth M. Ludmerer, M.D., associate professor of medicine and

history, has been elected a fellow of the American Association for the Advancement of Science, considered the nation's leading scientific organization.

Norris J. Lacy, Ph.D., professor of French, and Maya Rybalka, instructor of French in University College, have been named to the French government's *Ordre des Palmes Academiques*, with the title of *chevalier*. They join four other University colleagues who have received this honor.

Edward Greenberg, Ph.D., professor of economics, and Gary J. Miller, Ph.D., the Reuben C. Taylor, Jr., and Anne Carpenter Taylor Professor of Political Economy, received 1990 Burlington Northern Foundation awards for teaching excellence.

Student Achievements

A Washington University student team composed of sophomore William Chen, senior Peter Shawhan, and freshman David Sherman placed 11th in the nation among teams from 373 colleges and universities competing in the prestigious William Lowell Putnam Mathematical Competition. Two juniors, Richard R. Hoffman, Jr., and Edward C. Rafferty, have been selected as National Endowment for the Humanities (NEH) Younger Scholars for 1990. Each will receive a grant for a summer project and must submit a substantial paper and final report to the NEH at the end of the project. For the 13th time in 14 years, a University team won the Midwest Regional College Bowl Tournament and advanced to the national championship. Members, all juniors, were captain Michael Gehm, Bob Carrico, Shane Bradley, Brian Christenson, and Thomas Siegel. A team of third-year students from the School of Law, William A. Linton and Janice L. Treutelaar, won the American Bar Association's Regional Negotiation Competition in Omaha, Nebraska, then went on to win the national in Los Angeles, defeating seven other regional winners. Two teams captured top honors at the Midwest Regional Trial Practice Competition and competed at the National Trial Practice Competition in Houston. Third-year students Vernetta Gill and Christopher Hedican and second-year student William Langenbacher captured third place in the national. A team of third-year student Belinda Bush and second-year student Christopher Horner placed third at the National Environmental Law Moot Court Competition in New York;

the team of Al Hilado and Rita Nichols, third-year students, also reached the quarterfinals. Other teams advanced to the regional quarterfinal round of the 40th annual National Moot Court Competition and to the regional of the ABA's National Appellate Advocacy Competition. The women's volleyball team became the first Washington University team to capture a national championship when it won the NCAA Division III title. Senior Lori Nishikawa was Division III Player of the Year for the second straight season.

Students continue to be active volunteers in community service projects. Two groups of professional school students have taken their timely projects into area schools. Medical students have developed a program to instruct young students and their parents about AIDS, and law students have presented a mock trial in the schools to teach the realities of illegal drug use.

Voluntary Support

The University continued to benefit from the generous support of its alumni and friends. Several major commitments were made during the past year. The Anheuser-Busch Foundation pledged \$2 million to the John M. Olin School of Business to establish the August A. Busch, Jr., Distinguished Professorship in Marketing, in honor of the late St. Louis businessman and philanthropist. Mrs. John S. Lehmann, a St. Louis civic leader and philanthropist, made a gift commitment of \$1 million to the John M. Olin Library. Among her many previous gifts was a significant contribution to the recently completed medical library at the School of Medicine. The Southwestern Bell Foundation made a \$600,000 pledge that is now providing opportunities for collaborative teaching and research in the departments of Computer Science and Mathematics. A bequest of \$1.5 million was left to the University by the late Chester Myers, a prominent St. Louis industrialist and philanthropist, as a memorial to his parents. The funds will be used to improve campus accessibility for the handicapped, and Residence Hall I has been renamed Myers Hall. Alumnus Mark E. Mason and his wife, Myrna, of Pittsburgh, have pledged \$500,000 to the University for the proposed Center for Business, Law, and Economics in the John M. Olin School of Business, and for classroom renovations in Ridgley Hall in the

College of Arts and Sciences. Mason, a general partner in the Oxford Development Co., has been active in national alumni programs for 20 years. An anonymous donor has established the Center for American Indian Studies in Social Services in the George Warren Brown School of Social Work to provide scholarships and stipends for Native American graduate students. Finally, in honor of his distinguished career as the University's chief advancement officer, the University has announced that Residence Hall G will be renamed Herbert F. Hitzeman, Jr., Residence Hall. The announcement was made at a retirement dinner celebrating his 24 years of service to the University.

Sponsored Research

Washington University and its scholars and scientists continue to be successful in securing substantial research support from government agencies and private sources. The biomedical research agreement between Washington University and Monsanto Co. has been extended for four years, to a total of 12, with total funding commitments increased to nearly \$100 million; it remains the largest research collaboration between an American company and an American university. The School of Medicine has been designated a Specialized Center of Research (SCOR) in Coronary and Vascular Diseases and awarded a five-year SCOR grant of \$18.6 million by the National Heart, Lung, and Blood Institute. Washington University has been designated the lead Geoscience Node of NASA's Planetary Data System. This makes the University the chief facility for storing and distributing the data NASA has collected about the surfaces and interiors of Mercury, Venus, the Moon, Mars, and the larger satellites of the outer planets. The school's Lipid Research Center Core Laboratory has been awarded a six-year, \$6 million contract by Bristol-Myers Squibb Co. to assist with one of the largest drug development studies ever conducted by the company, involving a cholesterol-lowering drug. Theodore Reich, M.D., Samuel and Mae S. Ludwig Professor of Psychiatry and professor of genetics, has been awarded four grants totalling \$6.8 million from the National Institute on Alcohol Abuse and Alcoholism and the National Institute of Mental Health for his studies on genetic factors in alcoholism and depression. James A. Purdy, Ph.D., professor and

chief of radiation oncology physics at the Mallinckrodt Institute of Radiology, has received a \$1.4 million contract from the National Cancer Institute to develop and refine computer-based support systems used in planning radiation treatment for cancer. MERIT (Method to Extend Research In Time) status and five-year grants have been given by the National Institutes of Health based on consistent excellence in previous research, to Philip W. Majerus, M.D., professor of medicine and biological chemistry, \$2.3 million for his research in blood clotting; Bradley T. Thach, M.D., professor of pediatrics, \$740,000 for his research on Sudden Infant Death Syndrome; Arthur D. Loewy, Ph.D., professor of anatomy and neurobiology, \$1.4 million for research on nerve mechanisms in heart function; and Stuart A. Kornfeld, M.D., and Rosalind Kornfeld, Ph.D., professors of medicine and biochemistry, \$1.75 million for their research on the biochemistry of glycoproteins. The National Science Foundation has given Presidential Young Investigator Awards to Ronald S. Indeck, Ph.D., assistant professor of electrical engineering; Richard D. Rabbitt, Ph.D., assistant professor of mechanical engineering; and Robert C. Landick, Ph.D., assistant professor and Mallinckrodt Fellow in the departments of Biology and Biological Chemistry. A \$500,000 grant from the Department of Defense has established the Center for Optimization and Semantic Control in the School of Engineering to solve computational problems beyond the capacity even of supercomputers. Jeffrey I. Gordon, M.D., professor of medicine and biochemistry and molecular biophysics, was awarded the 1990 Young Investigator Award from the American Federation for Clinical Research for his work with lipid-binding proteins and their genes. Another School of Medicine faculty member, Steven M. Rothman, M.D., associate professor of pediatric neurology, has received a Javits Neuroscience Investigator Award from the U.S. Congress. The grant will provide \$1.1 million over seven years for his work with amino acids found in the brain. The National Institute on Drug Abuse has awarded the School of Medicine \$3.5 million for research designed to improve drug treatment in order to prevent the spread of HIV infection among intravenous drug users.

Faculty of Arts and Sciences

Students, faculty, and alumni have all contributed to Arts and Sciences in important ways this year.

Both numbers and quality of applicants for freshman admission to the College of Arts and Sciences remain strong. For the 1989 and 1990 fall entering classes, we had over five times as many completed applications as spaces in our freshman class, and with the strong pool of applicants, we would have been happy to admit many more of them than we did. We expect another excellent class this fall.

The Graduate School of Arts and Sciences had its highest enrollment since the late 1970s—1,119 students—and awarded 121 Ph.D. degrees, the most since 1981-82. With faculty shortages expected nationwide in Arts and Sciences by the mid-1990s, these graduate students are likely to find good opportunities for pursuing their professions.

University College, the adult continuing education school of this faculty, is also enjoying excellent enrollments, with the number of registrations about 10 percent higher this year than in recent years. This increase occurs at undergraduate and graduate levels in all three broad areas—humanities, natural sciences, and social sciences. In the 10 years since University College introduced its first graduate program—the very successful Master of Liberal Arts—graduate enrollment has been an increasingly important component, now accounting for about one-third of the students.

Student Awards

Karen Ho, a biology major, and Michael Eisenberg, a mathematics major, were among 115 sophomores in the country selected for Barry M. Goldwater Scholarships, which give assistance in the last two years of college to outstanding students in the sciences. Two seniors, Joshua Coben in French and Michael Pastreich in fine arts and

English, and one graduate student in French, Monica Duchnowski, received Fulbright grants for 1990-91. Among other nationally awarded fellowships to our graduate students were two awarded by the Woodrow Wilson Foundation to Dan Sherburne in anthropology and Carolyn Orange in education; a National Science Foundation Graduate Fellowship to Allen Jones in biology; and an IREX grant for study in Eastern Europe to Carol Costabile in German.

Faculty Recognition

Howard Nemerov, Edward Mallinckrodt Professor of English, served for the second year as Poet Laureate of the United States. Viktor Hamburger, professor emeritus of biology, received the National Medal of Science at the White House. Norris Lacy, professor of French, and Maya Rybalka, instructor of French in University College, received the French government's *Ordre des Palmes Academiques* for "advancing French culture." Robert Salisbury, Sidney Souers Professor of American Government, received a Guggenheim Fellowship, and he also received an award from the American Political Science Association for an article published 20 years ago that has proven to be "of unusual importance and significance to the field." Patty Jo Watson, professor of anthropology and member of the National Academy of Sciences, received both an Honorary Life Membership in the National Speleological Society and the Fryxell Medal of the Society for American Archaeology. Robert Landick, assistant professor of biology, received a Presidential Young Investigator Award. Clifford Will, professor of physics, was elected a Fellow of the American Physical Society.

The leading role of Raymond Arvidson, professor of earth and planetary sciences, in analysis of planetary images was recognized by NASA when his laboratory was named



Martin H. Israel

the lead Geoscience Node in NASA's Planetary Data System. Two investigations involving University space scientists were selected for development for flight on NASA's space station, one under the direction of Robert Walker, McDonnell Professor of Physics, and one involving the cosmic-ray physics laboratory of professors Joseph Klarmann, Robert Binns, and Martin Israel.

Interdepartmental Cooperation

The University is always greater than the sum of its parts. Following are two examples of strong cooperation across departments.

Robert Sussman, professor of anthropology, who does frequent field work in Madagascar, and Glenn Green, research associate in Professor Arvidson's laboratory in earth and planetary sciences, collaborated in a study of deforestation in Madagascar. They used Landsat satellite images and old aerial photographs to document the rate of deforestation and the specific kinds of terrain where it is happening. Their article appeared in *Science*—just in time for the 20th celebration of Earth Day.

Antonio Skármeta, the well-known Chilean writer, was here for the spring semester as Visiting Distinguished Professor of Romance Languages and Literatures. With Skármeta's close cooperation, the Performing Arts Department produced his play, *Burning Patience*, in the Drama Studio. In addition to several excellent student actors, the cast included a major role for Daniel Shea, professor of English.

Facilities Improvements

A campus-wide program of classroom renovations is under way, supervised by Associate Provost Gerhild Williams. Among the Arts and Sciences spaces affected by work done this year, or planned to start soon, are classrooms in Duncker, Cupples I, Eads, January, Wilson, Rebstock, and Eliot.

Work began on a complete renovation of the interior of South Ridgley. This work will increase usable square feet by more than 50 percent, providing new classroom space, offices for faculty and staff in German, Russian, and comparative literature, and accessibility for individuals with physical handicaps. These renovations have been made possible by income from the Danforth Capital Grant, which was part of the ALLIANCE campaign, and by generous gifts from alumni Mark Mason, A.B. '51, and A.E. Hotchner, A.B. '40, J.D. '40.

Architectural work has been completed on the new Natural Sciences building, which will provide essential new laboratory and office space for the departments of biology and earth and planetary sciences as well as badly needed classroom space for general use including a 150-seat lecture hall and two 75-seat classrooms. Part of the funding for this building is in place, again thanks to Danforth Foundation gifts to the ALLIANCE campaign, and we are looking to alumni and friends for other contributions.

Alumni

During this year I travelled extensively to meet with small groups of Arts and Sciences alumni. I brought them up to date on our achievements and plans, and I listened to them tell one another and me how Washington University has



Viktor Hamburger, professor emeritus of biology, receiving the National Medal of Science from President George Bush.

affected their lives. Their enthusiasm for this University has been exciting to see. It has translated itself into their active encouragement of prospective students and into growing financial support of our programs. In addition to capital gifts, our Arts and Sciences Annual Fund has had a record year, raising over \$1.4 million, including 156 annual named scholarships and over

\$200,000 from reunion classes.

With growing alumni support, creative faculty, and excellent students, Arts and Sciences will continue to merit national recognition.

Martin H. Israel

Dean
Faculty of Arts and Sciences

School of Architecture

Continuity and change, perennial themes in the study and practice of architecture, perfectly summarize activities in the School of Architecture during 1989-90. Faculty and students reflected on the lessons of the past and discussed the shape of the future, and we are all wiser in knowing that there are no single or simple answers to the enormous problems of our physical environment. Architects are "problem solvers," but we also have to learn how to live with problems that have no apparent or immediate solutions.

Students

Students are the School's most precious asset. Our pool of applicants to the 1989-90 freshman class was again strong in numbers and academic quality. Enrollment for fall 1989 included 239 undergraduate students and 95 graduate students, a number higher than the "comfortable" capacity of Givens Hall. Of these, nearly 37 percent were female, 14 percent were minority, 10 percent were international students, and 12 percent were from Missouri.

Characteristic of the achievements and aspirations of our students are David Lang, M.Arch. '90, and Karen Sorensen, A.B. '90. Lang was this spring's Frederick Widmann Prize winner, and he was awarded First Place in Category II of the 1989-90 Association of Collegiate Schools of Architecture/American Wood Council Student Design Competition with a cash prize of \$2,000. His submission, "Contemplatis," was a light wood structure to be erected on the moon. David also has earned a faculty appointment for summer 1990 to teach two classes in structures.

Karen Sorensen came to the School from Michigan. Following work in Fine Arts and a London internship through Boston University, she completed her undergraduate degree in architecture this spring, magna cum laude. Additionally, her undergraduate athletic performance included new school records in the 3,000-, 5,000-, and

10,000-meter races and qualification for nationals in all three events. Having won the School's "Most Outstanding Sophomore" award, she now plans to work for an architecture firm in the East and pursue her professional degree in architecture.

Faculty

Eleni Bastea, Ph.D., assistant professor of architecture, received a Grant-in-Aid stipend from the American Council of Learned Societies for her research in "The Rebirth of Athens: Planning and Architecture in the 19th Century."

Gerald A. Gutenschwager, Ph.D., professor of architecture, had his study, *The Political Economy of Health in Modern Greece*, published in Greek by the National Centre of Social Research in Athens. A Fulbright award in 1984 was instrumental in completing research for the book.

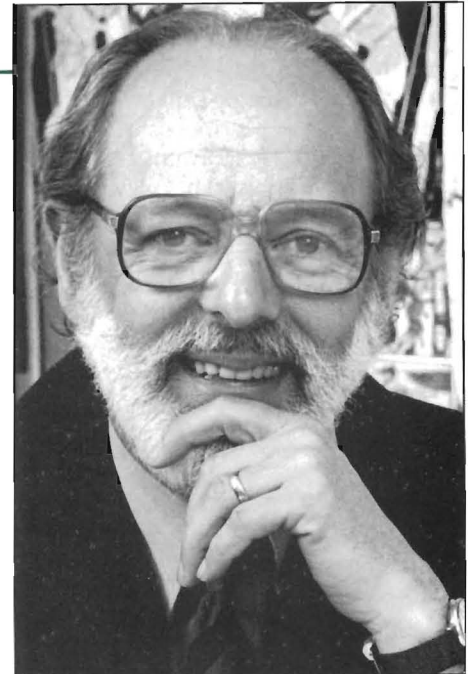
Lorens Holm, assistant professor of architecture, and John Hoal, lecturer in architecture, received honorable mention in an urban design competition, "Connections: St. Louis—Laclede's Landing."

Udo Kultermann, Ph.D., Ruth and Norman Moore Professor of Architecture, has published in a revised and expanded edition his *Geschichte der Kunstgeschichte (The History of Art History)*.

Adrian Luchini, assistant professor, had work included in the July 1990 edition of *Progressive Architecture*, a special issue on young architects.

Constantine E. Michaelides, FALA, dean, was part of an accreditation team that visited the Southern California Institute of Architecture in March. The group spent four days evaluating the Institute, which is one of only two U. S. architecture schools not attached to a university. Michaelides also gave a presentation on "Private Universities and Their Role in the Future" at an international architecture conference in Athens, Greece, hosted by the National Technical University of Athens, Michaelides' alma mater.

Donald C. Royse, professor, will be on a two-year leave of absence to serve



Constantine E. Michaelides

as Director of Urban Design for the City of St. Louis' Economic Development Corporation.

William K. Y. Tao, M.S.M.E. '50, affiliate professor, received the 1990 Eliot Society Award: "The Search." A member of the Board of Trustees and of the faculty of the schools of Engineering and Architecture, Professor Tao, following his "retirement" from his firm, continues to contribute to the technical and design education of architecture students.

Thomas L. Thomson, professor, had his residential architecture work published in *Country Home Magazine* and *Better Homes and Gardens Magazine*.

W. Davis van Bakergem, director of the Urban Research and Design Center and affiliate assistant professor, was an invited speaker at the "CAAD Futures '89" conference held at Harvard University's Graduate School of Design. He presented a paper, "Image Collections in the Design Studio," which will be published by the MIT Press in a book, *The Electronic Design Studio*, later this year. He also has been named honorary chairman of the nominations review panel for the 1991 AIA Citation for Excellence in Urban Design.

Janet Rothberg White, affiliate associate professor, won the Health

Care Interior Design Scholarship Competition in the category of Design Professional.

The School is pleased to announce six new appointments for 1990-91. They are Visiting Associate Professor Bill Boswell from the University of Texas, Arlington; Visiting Assistant Professor Susan Bower; Visiting Assistant Professor Lauren Kogod; Visiting Assistant Professor David Smiley; Visiting Associate Professor Carole Tiernan; and Visiting Associate Professor Todd Hamilton from the University of Texas, Arlington.

Alumni/ae

The generosity of our alumni and alumnae in time and resources again helped enhance vital links between students, faculty, and graduates.

Last fall, at the initiative of Jamie Cannon, B.A. '60, the School held its first "Meet the Faculty" breakfast.

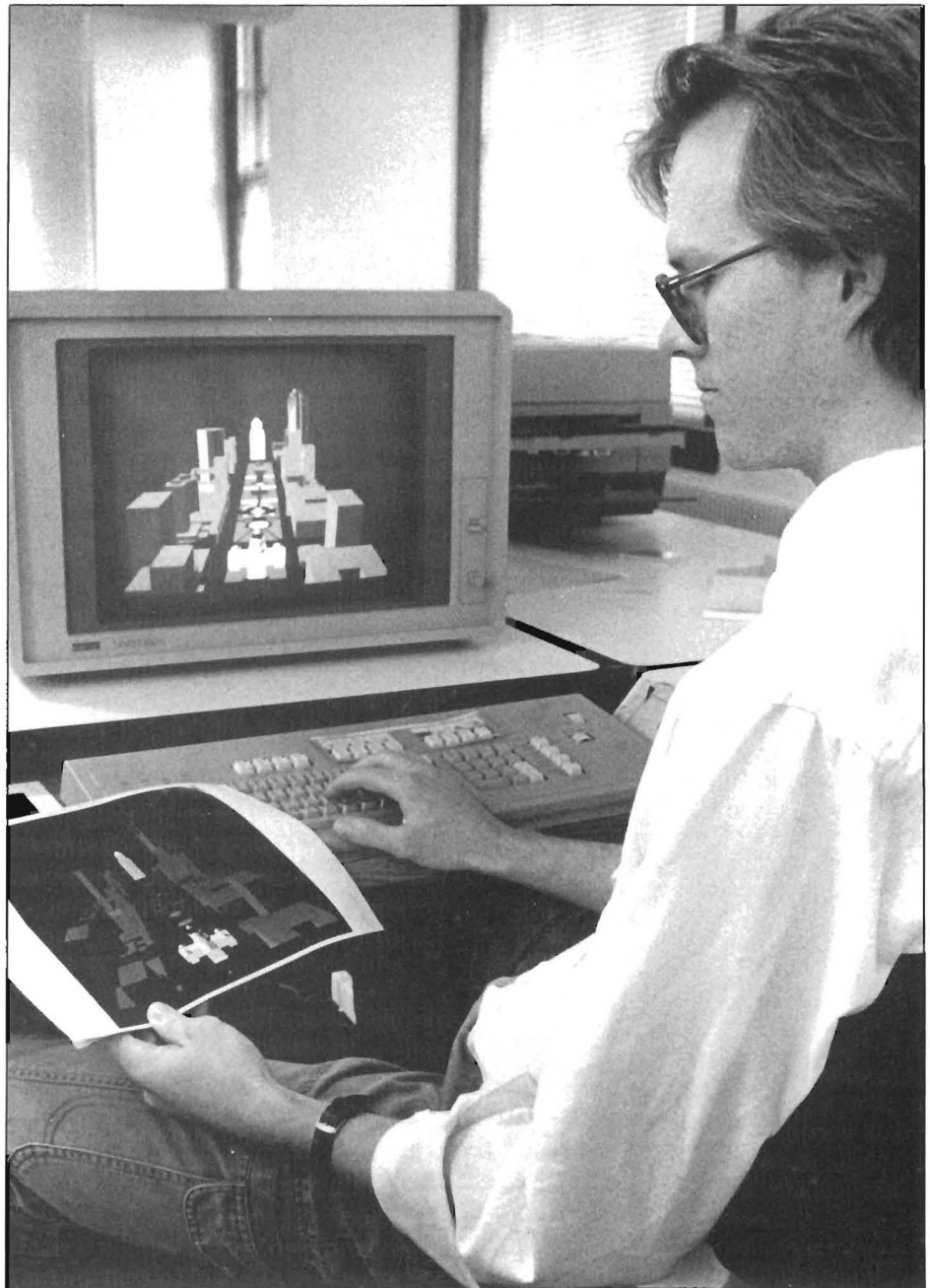
The School's Annual Fund received support from 28.9 percent of our graduates. Under Jamie Cannon's leadership, the Fund surpassed its goal of over \$116,000 for fiscal 1990 and increased 20 percent over the prior year. The average gift was over \$117. Curt Ittner, B.A. '51, chaired the School's Eliot Society membership committee. The Annual Scholarship Program also received the support of many individuals and corporations.

In a break from tradition at Commencement, graduating students organized a late afternoon diploma ceremony to which all St. Louis graduates were invited. Two days after Commencement, an alumni/ae breakfast was hosted in Houston in conjunction with the 1990 AIA Annual Convention.

Other Events

Two informative and instructive National Council meetings were held during the year under the chairmanship of Warren M. Shapleigh. In May, the School implemented an Internship Development Program (IDP). Members of the Council who are also principals in architectural firms will provide the core for a pilot program. This IDP will operate under the umbrella of the national program and help develop a stronger relationship between graduates and students.

Two new endowed lecture funds were established in 1989-90. A gift from



David Lang, M.Arch. '90, working with the latest computer equipment in the Urban Research and Design Center.

Mrs. Gertrude Bernoudy was used to create the William A. Bernoudy Lecture. The first Bernoudy Lecture was delivered by AIA Gold Medal recipient Fay Jones as part of the School's Monday Night Lecture Series. A gift from Mrs. Mary C. Layton established the Eugene J. Mackey, Jr. Lecture.

We were very pleased to see Gyo Obata, B.A. '45, receive one of the seven honorary degrees awarded by the University at Commencement. Obata is cofounder and chairman of Hellmuth, Obata & Kassabaum, and has achieved international acclaim for a wide variety

of distinguished buildings.

I am personally thankful to all students, staff, faculty, graduates, and friends whose contributions made the 1989-90 academic year an exciting and rewarding one. I am looking forward to a challenging and promising future.

Constantine E. Michaelides, FAIA
Dean
School of Architecture

John M. Olin School of Business

Achievements by faculty, students, and alumni of the John M. Olin School of Business highlighted 1989-90. In the second year of the John M. Olin Challenge, the School is realizing the potential for excellence that first attracted the support of its many friends and encouraged the Olin Foundation's generous investment.

Faculty Highlights

Several Olin faculty members earned special recognition from their students and colleagues, and three faculty members assumed leadership positions in major professional organizations. Nicholas Dopuch, Hubert C. and Dorothy R. Moog Professor of Accounting, was elected director of research of the American Accounting Association. Chakravarthi Narasimhan, associate professor of marketing, was elected secretary/treasurer of the Marketing College of The Institute of Management Science and was selected to chair the 1993 Marketing Science Conference to be held at the Olin School. Don L. Coursey, professor of business economics, was named co-editor of the *Journal of Economic Behavior and Organization*.

Gary J. Miller, Reuben C. Taylor, Jr., and Anne Carpenter Taylor Professor of Political Economy, was one of two Washington University professors to receive the prestigious 1990 Burlington Northern Foundation Award for distinguished achievement in undergraduate teaching. This is the third time in the five-year history of the award that a business faculty member has received it. Meir Rosenblatt, Thomas C. Whitmarsh Visiting Professor of Operations and Manufacturing Management, received the 1990 New England Academic Award for excellence in research from the Israel Institute of Technology.

Seven faculty members were named Teachers of the Year by BSBA and MBA students: Marcia Armstrong, assistant professor of marketing; Don Coursey; Raymond L. Hilgert, professor of management and industrial relations; Dean H. Kropp, Dan Broida Professor

of Operations and Manufacturing Management; Joel Prakken, adjunct assistant professor of finance; Russell Roberts, visiting associate professor of business economics; and Meir Rosenblatt.

Student Achievements

The second annual John M. Olin Cup Competition, on the topic, "Corporate Strategy: What to Do About 1992?" was ably defended by scores of BSBA and MBA students, with four teams competing as finalists. MBAs Todd Gruenig and Douglas Ostermann, and BSBA's Evan Lukasik and John Thomas won the final rounds, which were judged by The Honorable William E. Simon, chairman, WSGP International, Inc., and president of the John M. Olin Foundation, Inc.; Charles F. Knight, chairman, president, and chief executive officer of Emerson Electric Company and a University trustee; and Ralph Ingersoll, chairman, Ingersoll Publications.

Additionally, Olin students were recognized for their achievements in scholarship, service, leadership, and sportsmanship at the annual Business School Awards Ceremony, Eliot Honors Convocation, and Black Honors and Awards Program.

In spite of a softer job market, more than 120 companies interviewed Olin students for summer internships and full-time employment after graduation.

Enrollment

Record numbers of applications were received for the MBA program, with the average score on the Graduate Management Admission Test at 610, or the 86th percentile. Matriculating BSBA's have an average Scholastic Achievement Test score of 1198, with 45 percent ranked among the top 5 percent of their high school classes. Entering classes are diverse geographically, racially, and by nationality. More than 30 states, Puerto Rico, and the District of Columbia are represented in the BSBA class. About 29 percent of BSBA students are minorities, 37 percent are women, and 6 percent are international. Eight percent of MBA students are minorities,



Robert L. Virgil

25 percent are women, and 15 percent are from outside the U.S.—from Canada, France, Ghana, Israel, Japan, Korea, Yugoslavia, and other nations.

Applications for admission to the Ph.D. and the Executive MBA programs continue to rise, with five new doctoral and 60 new EMBA students representing 40 companies and not-for-profit organizations expected in the fall. Also in the fall, the Olin faculty will offer the second annual manufacturing strategy seminar for senior manufacturing executives.

National Recognition

Recently in *U.S. News and World Report* and in *Business Week's Guide to the Best Business Schools*, the John M. Olin School of Business was described as being among the nation's most promising, forward-moving business schools. Singled out as a school with strong momentum, the quality of Olin's faculty, student body, and programs was stressed.

Alumni Achievements, Special Events

Mahlon Rubin, BSBA '48, Leopold Abraham, BSBA '49, Lewis Wolff, MBA '61, and Bruce V. Carp, BSBA '67, were honored by the Olin School for their distinguished career achievements, and Vernon and Marion Piper were awarded the Dean's Medal for special service to the School. John Clancy, MBA '85, J. Walter Kisling, Jr., MBA '69,

Marvin Davis, MBA '66, and Marilyn Parker, BSBA '54, MBA '55, among other alumni, published important books on business topics.

Charles M. Harper, chairman and chief executive officer of ConAgra, received the School's first Excellence in Business Award when he delivered the 11th annual Kellwood Lecture. The nation's top accounting professors held a conference at Olin, and the Midwest and International Mathematical Economics Conferences convened at Olin last fall. In another highlight, U.S. Senator Bill Bradley launched the Executive MBA's first economic forum, which drew an audience of 700.

Progress Toward the John M. Olin Challenge

With the leadership of University Trustees Charles F. Knight and Alvin E. Siteman, who also is chairman of the School's capital gifts committee, president of the Siteman Organization, and chairman of Mark Twain Bancshares, Inc., and with the help and support of thousands of alumni and friends, the Olin School progressed toward meeting the \$15 million Olin Foundation challenge for new endowment and annual support. To date, more than \$11 million in new gifts has been committed.

The total Annual Fund, at \$1,617,767, was up by 17.6 percent, setting a new record. Several more new records were set: overall alumni participation reached 35.7 percent; 123 individuals joined the Eliot Society in support of the School; graduating BSBAs, MBAs and Executive MBAs pledged over \$145,000 to the Annual Fund. Since our graduating students often know our school best, their votes of confidence are especially gratifying. Over 65 percent of the MBAs and 100 percent of Executive MBAs pledged. Not to be outdone, our honored reunion classes pledged over \$220,000 to the Annual Fund. Important commitments of endowment were received from Jefferson Smurfit Corporation, Mrs. Melba Seay and The Seay Foundation, Mark E. and Myrna Mason, Mr. and Mrs. John K. Wallace, Jr., and Mr. and Mrs. Bennett Frelich. The deadline for fulfilling the Olin Foundation's challenge is December 31, 1992.

Faculty and Administrative Changes

Lyn D. Pankoff, professor of quantitative business analysis, became associate



Nicholas Dopuch, Hubert C. and Dorothy R. Moog Professor of Accounting, is the newly elected director of research of the American Accounting Association.

dean for academic affairs. P. Jean Milburn was named associate dean for MBA programs.

Don L. Coursey was promoted to full professor, and Jacqueline (Grace) Pownall was promoted to associate professor of accounting.

Glenn Detrick has decided to leave his position as associate dean for administration to become vice president, educational programs, Graduate Management Admission Council. I will miss Glenn, who has been my right arm for 13 years. The administrative team he has developed will continue the School's momentum.

With deepest sadness, the School said farewell to Joseph W. Towle, professor emeritus of management, who died July 21, 1989. He taught for 21 years before retiring in 1975, and he also served as acting dean in 1967-68.

Conclusion

Each year I witness growing enthusiasm for the Olin School's quest to become one of the nation's best schools of business. This goal is supported by the Trustees, the administration, alumni, and friends. When the School succeeds, it will be because of the many hundreds of alumni, friends, and volunteers who unselfishly donate their time and resources. We are deeply grateful for all they do.

Robert L. Virgil

Dean
John M. Olin School of Business

School of Dental Medicine

During these final years of the School of Dental Medicine, we measure our successes by very different criteria than we have in the past.

At the time of the closure announcement in June 1989, a full complement of students had been accepted for the class of 1993. Associate Dean Richard Brand, Marie Cuccia-Liddy, and their staff in the Office of Student Services did a superb job in assisting these students in locating positions in other dental schools. Every incoming freshman who requested our assistance was successfully placed elsewhere.

During that same summer, 23 of the 38 students who would have been the class of 1992 transferred for their sophomore year. The 15 incoming sophomores who returned have received the full sophomore curriculum. Four students in the group transferred during the year, while the remaining 11 are finalizing their plans for transferring this summer, once again with outstanding support from our Office of Student Services.

The incoming junior and senior classes returned virtually intact and will graduate from the School. The class of 1991 will be our last. Our faculty, staff, and administration take pride in the quality of education that we are committed to providing these students.

The two graduate residency programs have also made their final plans. The Orthodontic program admitted the class of 1991 in July 1989, while the program in Oral and Maxillofacial Surgery will completely close in June 1990. Those residents completing the fourth year of their surgery program will graduate, while all other residents have transferred or will transfer elsewhere to finish their education. Because of the interactive nature of oral and maxillofacial surgery training, in which residents from one year provide support services for residents in other years, it was not possible to plan a phase-out similar to that of our other programs.

This June, Dr. David Bensinger retired after more than 40 years at the

School, during which he has served as a faculty member, executive associate dean, and dean. He is a friend and adviser, and his love for the School and his service to it are unmatched. No one has given more to this School, and probably no one feels the closure more deeply. We wish him happiness and fulfillment in his retirement.

Dr. R. James McCune, also retiring this year, has served as chairman of the Department of Restorative Dentistry and most recently as clinic director and associate dean. He was of great assistance in the difficult planning that allowed this past year to proceed successfully. We wish him much luck with his future plans.

Some younger members of our full-time faculty have completed plans for moving on to new positions. Dr. Gregory Spackman is joining the Oral and Maxillofacial Surgery Department at Southern Illinois University, and Dr. Rebecca German is moving to the Department of Biology at the University of Cincinnati. Earlier this year, Dr. Michael ShROUT moved to the Department of Oral Diagnosis at the University of Georgia.

With the end of the first year of our phase-out and the reduction in the student body, it was necessary to plan for reductions in staff. Programs were offered to help these individuals with their transitions to retirement or other employment. The reduction in the number of students in the clinic has also led to the organization of an intramural faculty practice to assist in completing treatment plans on currently registered patients.

In October 1989, we submitted our phase-out plan to the Commission on Accreditation of the American Dental Association. The committee preparing this document was chaired by Dr. Richard Diemer. We are pleased to report that the Commission chose to grant full accreditation to our phase-out plan without the necessity of a site visit.

Plans have been made to preserve and continue the Harriett L. Steuernagel Dental Collection. A comprehensive dental library will be incorporated into the new facility of the



Richard J. Smith

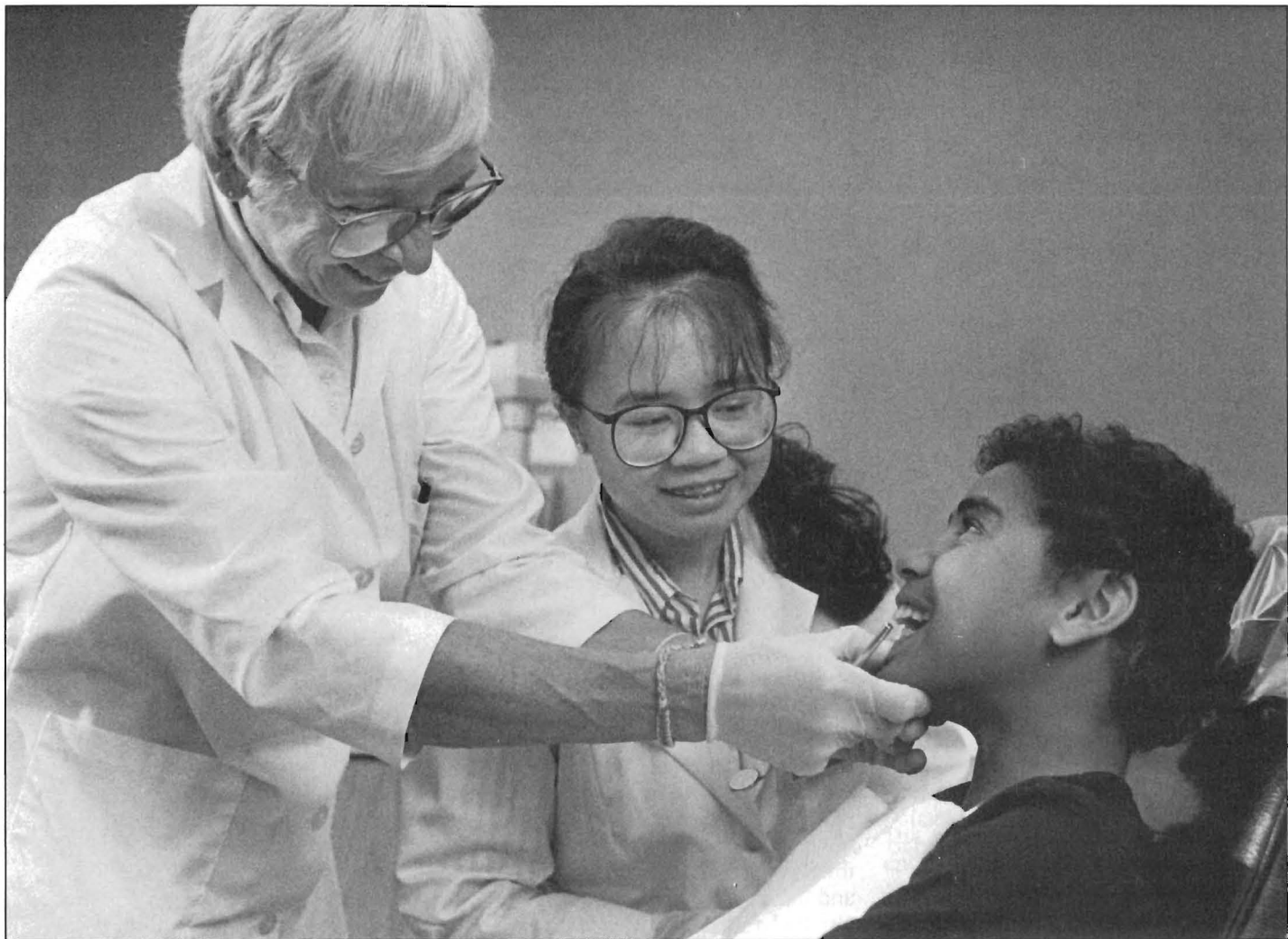
School of Medicine. Alumni as well as the St. Louis dental community will be able to benefit from this resource. Our McKellops Rare Book Collection will also be retained by the University. We wish to express our sincere appreciation to Professor Susan Crawford and her staff in the medical school library for their support in making these arrangements.

Much thought has also been given to perpetuating the memory of the School. The bronze plaques of former deans and photographs of the School will be relocated to a room in Whittemore House. This will preserve our most distinctive memorabilia in a location accessible to alumni and the Washington University community.

In spite of the obstacles and problems of the past year, many of our faculty members have continued to distinguish themselves with professional activities.

Dr. Samir El-Mofty, chairman of the Department of Oral Pathology, has been reappointed to the Pathology-Microbiology Committee of the American Dental Association Joint Commission on National Dental Examinations, and has been elected chairman of the Missouri Dental Board Oral Pathology Examinations Committee.

Dr. Charles Hildebolt of the Department of Diagnostic Services has



Students and faculty members work together to provide important dental services to the St. Louis community.

continued his funded research in collaboration with Dr. Michael Vannier of the School of Medicine, and has presented invited lectures to the American Association of Orthodontics and to the Engineering in Medicine and Biology Society.

Dr. William F. P. Malone, professor and chairman of the Department of Restorative Dentistry, received the Teacher of the Year award in a touching and emotional presentation by the class of 1989. Dr. Malone, who will also serve as associate dean for Clinic Affairs in 1990-91, recently presented an invited lecture in Santo Domingo. The newest edition of his book *Tylmans Theory and Practice of Fixed Prosthodontics* has been received with rave reviews.

Dr. Thomas Schiff, professor and chairman of the Department of Diagnostic Services, has continued to lecture internationally, this past year visiting Mexico, Australia, and Brazil.

Dr. Schiff also serves as co-chairman of the Council on Educational Materials of the American Academy of Maxillofacial Radiology and as a consultant to the Council on Dental Therapeutics of the American Dental Association.

Several members of our biomedical sciences department have been successful in the pursuit of grant awards from NIH. Dr. Rebecca German has been funded to continue her research on "Ontogeny of Feeding in Primates," and Dr. Dean Dessem has been awarded grants for his work on "Interneuronal Processing of Tooth Mechanoreceptor Feedback" and on "The Anatomy of Identified Jaw-Muscle Spindle Afferents." Dr. Philip Osdoby, chairman of the Department of Biomedical Sciences, made invited presentations to the National Aeronautics and Space Administration and at the European Symposium of Calcified Tissue International. Dr.

Osdoby also served as chair of a Gordon Conference on Cellular Mechanisms of Cartilage and Bone Formation, while continuing his funded research from NIH.

The thoughts of most of us in the School of Dental Medicine focus during these difficult days on the friendships that we have made here, and on our pride in what the School has accomplished and in what it has represented. The staff and faculty who are retiring or moving on this year have our sincerest best wishes and our thanks for their contributions to our programs.

Richard J. Smith
Dean
School of Dental Medicine

School of Engineering and Applied Science

During the 1989-90 academic year, the School of Engineering and Applied Science continued to make good progress toward its goal of becoming a preeminent center of engineering instruction and research.

During the 1989-90 academic year, the School granted 33 Doctor of Science degrees, nearly double the number granted last year and the most ever the School has granted.

This year 244 Bachelor of Science degrees in eight different fields of engineering and applied science were earned by 218 students from 37 states and 10 foreign countries. Students from outside the St. Louis area constituted almost three-fourths of the graduating class, proof of the School's growing national and international recognition. In addition, 15 percent of the Class of 1990 were women, and 10 percent were African, Spanish and Asian-American. The School awarded a total of 151 master's degrees, as compared to 122 the year before.

Recruitment of the 1989-90 freshman class was successful, with 219 deposits for enrollment having been received by early summer. Based on class rank and Scholastic Aptitude Test scores, the caliber of these applicants is exceptional.

The Three-Two Program is also faring well, with deposits running about the same as last year. All indications are that the incoming class will total about 55. Given the success of both the freshman and Three-Two recruitment programs, a small increase in enrolled undergraduate students is anticipated for the 1990-91 academic year.

Nearly 100 companies visited the Engineering Placement Office during the year, and by Commencement, over 90 percent of the students seeking permanent positions had already *accepted* an offer. Approximately 30 percent of the students completing their bachelor's degrees will attend graduate school in engineering, business, or medicine. In addition, student and company interest is still growing for the Engineering CO-OP

Program. As the 1990-91 academic year starts, 177 students are involved in CO-OP activities with more than 116 companies, a marked increase over the previous year.

A new professional degree, the Master of Control Engineering, one of the few such degree programs in the nation, was established and is currently being offered jointly by the departments of Chemical Engineering and Systems Science through the School of Technology and Information Management. Another new degree, the Bachelor of Science in Biological and Engineering Sciences, will begin in the fall of 1990. This new degree program, a joint effort between the School of Engineering and Applied Science and the Department of Biology, is designed to prepare students for graduate study in medicine, biomedical engineering, biochemical engineering, environmental engineering, and the biological sciences.

The continuing education division of the School, the School of Technology and Information Management (STIM), also had a successful year. STIM granted 35 Bachelor of Technology degrees and 56 Bachelor of Science degrees in industrial production management and data processing. STIM also awarded 19 Master of Engineering Management and 60 Master of Information Management degrees as well as 59 certificates. Continued enrollment growth in its graduate degree and certificate programs is anticipated.

A new program focusing on logistical issues such as production planning, product support, and distribution was initiated with McDonnell Douglas in spring 1990. So far, 30 applicants have been admitted to the graduate program, 57 to the bachelor's program, and 28 to the certificate program in logistics. In addition, the Computer Integrated Manufacturing Center (CIMCenter), a consortium of manufacturing firms dedicated to the effective application of manufacturing techniques, and its Computer Integrated Manufacturing Lab (CIMLab), a hands-on manufacturing lab in a product-neutral, cooperative environment, are greatly expanding. Since CIMCenter's beginning in 1988



James M. McKelvey

and CIMLab's beginning in 1989, they have grown to include a total of 55 affiliate companies and 231 participating companies. Through May of this year, 3,514 area professionals had attended 129 CIMCenter events, which included everything from speakers to seminars that covered a range of manufacturing applications and addressed both technical and management issues.

Also, a joint master's program with the University of Tilburg in Holland produced its first graduates as 28 Tilburg students completed their Master of Information Management degrees last year. Representatives from Washington University traveled to Holland for the formal ceremony, and a new class of 18 students arrived in St. Louis for the "state-side" part of the program in mid-June.

Three faculty members were recognized during the past year for their outstanding achievements. Robert Morgan, the Elvera and William Stuckenberg Professor of Technology and Human Affairs and founder of the School's engineering and policy department, was honored with a Distinguished Faculty Award at the 1989 Washington University Founders Day ceremonies. At the 1990 Engineers' Honors Banquet, Hirokai Mukai, professor of systems science and mathematics and director of the Master of Control Engineering program, and Curt Thies, professor of chemical

engineering, were named Professors of the Year.

Three distinguished alumni received Alumni Achievement Awards at the School's 1990 Annual Dinner of the Engineering Century Club. Walter R. Evans, BSEE '41, was honored for his achievements in the field of automatic control and the development and application of the root-locus technique; Julian W. Hill, BSChE '24, was honored for his achievements in developing synthetic polymer fibers instrumental to the production of commercial textile products; and Janet C. Lenz, BSCE '70, MSCE '72, was honored for her contributions in providing professional leadership in the civil engineering field. In addition, I. E. Millstone, BSArchE '27, received a Distinguished Alumnus Award at the 1989 Founders Day celebration for his outstanding service to the University and School.

Bill Catron, director of Engineering Central Services, retired after nearly a decade of exceptional service with the School, and Buford D. Smith, professor of chemical engineering who joined the School's faculty in 1965, also retired and was named Professor Emeritus.

Daniel Fuhrmann, assistant professor of electrical engineering, was promoted to the tenured faculty; William L. Marsden, formerly assistant dean of the School, was promoted to associate dean; Thomas G. Harmon, professor of civil engineering and director of the Construction Materials and Management Center, will be named the first Clifford W. Murphy Professor of Civil Engineering in fall 1990; and David F. Jones, senior director of development, was promoted to assistant vice chancellor and director of schools alumni and development programs for Washington University.

The Five-Year Plan

The 1989-90 academic year was the third year of the School's Five-Year Development Plan. Significant progress has been made toward the goals of the plan, as described below:

Harold D. Jolley Hall was completed in April and dedicated on June 19, 1990, with John F. McDonnell, chairman and CEO of McDonnell Douglas Corporation, as the dedication speaker. The building's 54,000 square feet of gross space increases the School's available space by about 25 percent. The building will provide space for the expansion of the departments of Electrical Engineering, Mechanical



Professor Eugene B. Shultz, Jr. (left) and Affiliate Professor Wayne G. Bragg. Their innovative research has shown that roots of common gourds could serve as cooking fuel in underdeveloped countries, significantly reducing tree and shrub loss caused by gathering firewood.

Engineering, and Computer Science.

Major renovations in Bryan Hall, Cupples II, and Urbauer Hall began on June 4 and are scheduled for completion before the fall semester. Thus, the expansion and enhancement of the School's space called for by the Five-Year Plan will be completed in time for the start of the 1990-91 academic year.

The Five-Year Plan provides for a major expansion of the regular engineering faculty from 71 members in the base year of 1986-87 to 93 members at the start of the 1992-93 academic year. Since the base year, the School has made a total of 28 new regular faculty appointments, and there have been 14 retirements and resignations, resulting in a net gain of 14. The School now has 85 regular faculty members. Given that the School has a large number of impending retirements over the next few years, and given the shortage of qualified individuals seeking academic positions, it appears likely at this time that an additional one or two years may be required to reach the target faculty size.

Additional money above and beyond the normal operating budget needed to implement the Five-Year Plan was estimated in 1987 to be \$21.25 million.

This included \$8 million in new endowments, \$9.25 million in new construction and renovations, and \$4 million for new scientific equipment and research initiation costs associated with bringing new faculty to the School.

On July 1, 1988, when the School had \$16 million in hand for the Five-Year Plan, an Advancement Campaign designed to raise the remaining \$5.25 million was launched. This campaign, under the leadership of alumnus and University Trustee Stanley Lopata, A.B. '35, reached its goal in spring 1990, thanks to generous contributions made by many alumni and friends of the School.

As the 1990-91 academic year begins, it is apparent that the start-up costs associated with bringing new faculty into the School are going to exceed the amount anticipated in 1987. Therefore, new strategies will have to be developed early in the academic year to enable the School to complete all of the goals of the Plan.

James M. McKelvey

Dean
School of Engineering
and Applied Science

School of Fine Arts

The 1989-90 academic year was a time of growth and change for the School of Fine Arts.

Enrollment topped 300 undergraduate students for the first time in many years, and new planning initiatives were begun across all disciplines of the School.

I arrived last summer to begin my tenure as dean in time to welcome the 1989-90 entering class. I was especially fortunate in following the term of James Davis as acting dean, which prepared the way for much of our success this year. Although my rearview perspective is somewhat limited, I am encouraged by recent signs of growth and stability at the School and by the sense of community that welcomes newcomers and extends back to include faculty, friends, and alumni of more than half a century. The School continues to be vital and productive and to maintain the standards for professional art education it helped to establish nationally years ago.

Students

Not only has the number of students enrolled in the School increased over the past two years, but the quality has improved as well. Because the School is one of a handful of professional art schools associated with a major research university, we are the number one choice for a high percentage of our most qualified applicants. Last fall's freshman class had the highest combined SAT scores of any freshman class of the past decade, and more than half came from the top 10 percent of their high school classes. The admission process has become increasingly selective as we have an exceptionally high rate of acceptances of our offers of admission. The result is a motivated and talented group of students.

This year's graduating class is a good illustration. In addition to being the largest senior class in a number of years, more than one-third graduated with honors, exceeding all previous classes on record.

Other students in the class of 1990 who received honors or awards this year include Michael Pastreich, who was awarded a Fulbright Travel Scholarship to go to Finland to study silversmithing. Julia Randall was awarded the Milliken Traveling Scholarship of \$4,000 and residency at the School's Paris studio next year. Joel Tachau gave a presentation on the School's design program at a national conference for students at the American Design Center. Awards to members of the junior class include the Vermont Studio School Award to Christine Kelley and a summer of study at Skowhegan in Maine for Matt Braun.

Faculty

In addition to many exhibitions in Chicago and St. Louis, faculty artists exhibited at galleries across the country and in Europe. James McGarrell had one-person exhibitions in New York at the Frumkin/Adams Gallery, at the Jane Haslem gallery in Washington, D.C., at the Gallerie Simonne Stern in Atlanta, and at the Frances Wolfson Art Gallery at Miami-Dade Community College (which included an exhibition catalog of recent paintings). A one-person exhibition of new work by Peter Marcus took place last fall at Galerie van Mourik, Rotterdam, Belgium. Marlene Alt had work included in "Tableaux Vivants," an exhibition at the San Francisco Arts Commission Gallery, and in a one-person exhibition at Warm Gallery in Minneapolis. Stan Strembeck's photographs were exhibited at the Rhode Island School of Design, and Ron Leax's sculpture was shown at the New Harmony Gallery of Contemporary Art in Indiana. Joan Hall exhibited work in an exhibition of handmade paper at the E. L. Wiegand Museum of Art in Reno and at the International Biennial of Papermaking at the Leopold-Hoesch Museum in Duren, West Germany, which also included artwork by alumna Karen Stahlecker, BFA '77.



Joe Deal

The international character of the School will be further enhanced next year with two new faculty appointments. Martin Ball, senior lecturer in painting at Newcastle Upon Tyne Polytechnic in England, will be a visiting professor of painting, and Barbara Bendl-Markstein, instructor at the University of Applied Arts in Vienna, will be a lecturer in graphic design.

Jennifer Colten, instructor at the Boston Institute of Art, will begin her appointment as lecturer in photography next year.

Guest artists have made a great contribution to the teaching programs in all areas. The highlight of these was the return to St. Louis of New York artist Judy Pfaff, BFA '71, who became the first Henry L. and Natalie Edison Freund visiting artist, cosponsored by the School and the St. Louis Art Museum, where her work was exhibited. Other guest artists included graphic designer Phillip Burton; performance artist David Hall; photographers Lynn Brown and Roger Palmer; and sculptor Ursula Von Rydingsvard, whose visit was arranged in cooperation with Laumeier Sculpture Park. Painter/printmaker Juan Sanchez was also a guest artist who worked with our Contract Print Shop to produce a large mixed-media print.

Alumni

Since arriving at the School, nothing has impressed me more than the achievements and strong support and allegiance of our alumni. At the first conference I attended of deans and directors of art schools from all over the country last fall, I seemed to be surrounded by other deans who introduced themselves as alumni of Washington University. Later, at the National Conference of the College Art Association in New York, our alumni reception filled the hall and spilled out into the corridors in our hotel. In Dallas, a well-attended alumni reception was hosted by Jim Olvera, BFA '78, and Dexter Fedor, BFA '79.

The number of alumni donors is, once again, up slightly from the previous year, and the Annual Fund (which passed our goal for the year in January) is expected to exceed \$150,000. Fifteen new members joined the Eliot Society this year, and there are 62 new members in the Century Club.

Finance and Facilities

This year, as a result of increased enrollment and support from the central administration, the School will end the fiscal year without an accumulated deficit for the first time since going on the reserve system. Budget and enrollment projections indicate a stable future for the School, with some room for growth. However, new costs are anticipated in updating equipment and facilities for which repairs and replacement have been deferred for some time.

Work on Bixby Hall has continued this year, resulting in improved conditions for the health and safety of our students, faculty, and staff. Security and accessibility have been upgraded with new entry ramps for the handicapped and steel, combination-lock doors. Shuttle service to Lewis Center has been improved, adding to the security of our students who travel between the two buildings.

Construction of an acid room in the printmaking area has reduced exposure to toxic fumes. Improved and reassigned office and seminar space and the addition of a student/faculty lounge in Bixby Gallery will be



Chancellor William H. Danforth and a student at the School of Fine Arts Core Exhibit in May.

completed over the summer, providing a more efficient and comfortable working environment for everyone.

The most significant renovation planned for Bixby Hall, however, is for new heating, ventilation, and air conditioning. At its March 2 meeting, the Board of Trustees approved a \$1.9 million, three-phase plan allowing construction to begin on a new HVAC system for the entire building. Phases 1 and 2 include replacement of the existing heating system and the addition of new ventilation and exhaust systems, which will greatly reduce hazardous vapors in the painting, printmaking, and metalsmithing studios. This construction will be under way soon.

In Conclusion

The School of Fine Arts has a long tradition of excellence, stable enrollment, and tremendous resources in its students, faculty, and alumni. One

of the challenges we face is the continuing need to make improvements to our physical facilities, to upgrade our studios, and to replace worn and outmoded instructional equipment. Another is to develop new initiatives by continuing the program review and planning process begun this year. New technologies and new approaches to established media have redefined many of the traditional boundaries in art and design and have created new opportunities for professional artists and designers. These changes must be reflected in curriculum, facilities, and equipment if the School is to reach its full potential, continue to attract the finest students and faculty, and remain at the forefront of rapidly changing fields of art education.

Joe Deal

Dean
School of Fine Arts

If law schools had annual themes, our theme for 1989-90 would have been "Women in the Law." This was the 120th anniversary of the admission to Washington University of the nation's first women law students, Phoebe Couzins and Lemma Barkaloo. We marked that anniversary in a variety of ways. Our speaker for the fall Convocation was Roberta Ramo Cooper, the first woman candidate for the presidency of the American Bar Association. The final argument in the Wiley Rutledge Moot Court Competition was presided over by three women jurists, the first to be appointed to their respective Supreme Courts: Honorable Shirley S. Abrahamson of Wisconsin, Honorable Linda K. Newman of Iowa, and Honorable Ann K. Covington of Missouri. At year-end, graduating seniors were addressed by the Honorable Monica DeGreiff, former Minister of Justice of Colombia.

Faculty

Two outstanding new faculty members joined us in 1989. Associate Professor Clark Cunningham, who came from University of Michigan School of Law, teaches Pretrial Practice, a clinical course, and a seminar in Law as Language. Associate Professor Richard Lazarus, who was assistant to the Solicitor General of the United States and was formerly on the faculty of Indiana University School of Law, teaches Torts, Remedies, and Hazardous Substances.

Professor William Jones was named the Charles F. Nagel Professor of International and Comparative Law.

The following is just a highlight of some of our faculty's accomplishments. Professors William Jones, Richard Kuhns, Daniel Mandelker, and Bernard Reams published new books, and Professor Mandelker was elected a Senior Fellow of the Urban Land Institute, the only professor ever to attain that position. Professor Charles McManis was awarded a Fulbright Fellowship to lecture in Korea next year. Professors Susan Appleton and

Jules Gerard were frequently interviewed and quoted on both sides of the abortion rights dispute. The two of them and Professor McManis jointly taught a course in the School of Medicine. Professor Gerard was also appointed to the Missouri Advisory Committee to the U.S. Commission on Civil Rights. Professor Stephen Legomsky chairs a committee that meets bimonthly with Gene McNary, Commissioner of the Immigration and Naturalization Service, to review policy issues in immigration. Professor Frances Foster-Simons delivered lectures at Stanford, Columbia, and Iowa universities on the legal aspects of the Soviet reforms. Professor Michael Greenfield was appointed a member of the Consumer Advisory Council of the Federal Reserve Board. Professor Karen Tokarz was awarded the First Annual President's Award from the Women Lawyers Association of Greater St. Louis, and was named to the new Missouri Gender Bias Task Force.

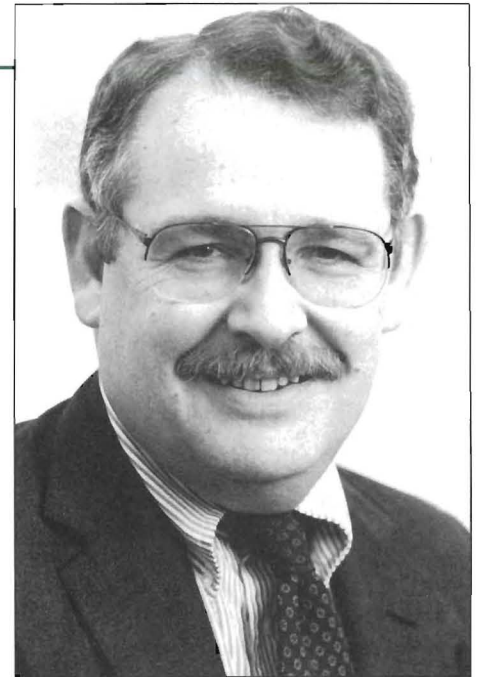
Three of our recent graduates, Tom Glassberg, J.D. '87, Laura Mellas, J.D. '87, and Robin Wellford, J.D. '82, inaugurated a new program in Legal Research and Writing as full-time instructors.

Three visiting professors were at the School during the year. Assistant Professor Susan Carlson taught courses in the clinic and Pretrial Practice and advised student competitions. Associate Professor Lawrence Iannotti taught Evidence, Legal Profession, and Trial Practice. Professor Linda Elrod taught Family Law and Real Estate Transactions.

All of us were saddened by the death of Gary Boren, a faculty member since 1967. The *Quarterly* will publish the remarks from the memorial service held at the School.

Students

Applications for admission increased again in 1989, and 243 students enrolled in the first-year class. They represented 109 colleges and universities, 33 states, and 43 academic majors. Women made up 39 percent of the class and minorities 10 percent.



Dorsey D. Ellis, Jr.

Washington teams won first place in the ABA National Negotiation Competition and finished third in the ABA-College of Trial Lawyers' Trial Practice Competition and the National Environmental Law Moot Court Competition.

Special Events

The School cosponsored, with the Center for the Study of American Business, a conference on Product Liability Reform. Professors George Priest of Yale, Marshall Shapo of Northwestern, and product liability lawyers Stanley Prieser and Malcolm Wheeler debated the issues.

Professor Robert McKay of New York University delivered the annual Tyrrell Williams Lecture on "The Rise of the Justice Industry and the Decline of Legal Ethics." Professors Pat Cain of the University of Texas, Art Leonard of New York University Law School, and Jean Love of the University of California at Davis presented principal remarks at a Symposium on Racism, Sexism, and Homophobia in Legal Education. Alice Erh-Soon Tay, Challis Professor of Jurisprudence at the University of Sydney, delivered a Lewin Lecture on "Human Rights and Legal Rights."

Distinguished lawyers, judges, and professors visited throughout the year. Desmond Fennel, president of the Bar of England, and Professor Michael

Zander of the London School of Economics spoke to the faculty on the proposal to eliminate the division between barristers and solicitors in England. Honorable Harvey Sorkow, A.B. '51, who was the trial judge in the *Baby M* case, spoke to the Century Club on the legal issues involved in surrogate motherhood.

The Champ Clark Chapter of Phi Alpha Delta Law Fraternity and the ABA Law Student Division sponsored a panel discussion on "Seizing Lawyers' Fees" in RICO and drug cases. Kathleen F. Brickley, George Alexander Madill Professor of Law, moderated the panel, which included prominent defense attorneys, assistant U.S. attorneys, professors, a federal public defender, and a U.S. District Judge.

Administration

Cornelius "Kip" Darcy assumed the position of Director of Admissions. Professor Ronald M. Levin has been appointed associate dean beginning July 1, 1990. Professor John Drobak, who has served as associate dean since 1986, will return to full-time teaching and research.

The Building

Much of our planning for the School's future has been focused on space needs. Temporizing adjustments have continued to be made, including the creation of a computer and video lab by partitioning off space in Freund Law Library.

A feasibility study to assess options for long-term solutions was carried out by the architectural firm of Kallmann, McKinnell and Wood, the designers of Simon Hall and of the campus master plan. After consulting with the University's administration and the School of Law National Council, we asked the architects to undertake some preliminary conceptual planning for a new law building.

Alumni Activities

Distinguished Alumni Awards were presented to Donald L. Bryant, Jr., J.D. '67, chairman and chief executive officer of the Bryant Group, Inc., and the Honorable Joseph F. Cunningham, J.D. '52, who retired during the year from the Illinois Supreme Court. James N. Herron, J.D. '61, senior executive vice president of Ryder Systems, Inc. in Miami, was inducted into the Order of



Justice Linda K. Neuman (from the left), Justice Shirley S. Abrahamson, and Judge Ann K. Covington congratulate Daniel Zegura '90 and William H. Anderson '90 after final arguments at this year's Wiley Rutledge Moot Court Competition.

the Coif as the School's honorary initiate.

Fred H. Leyhe and Albert E. Schoenbeck organized the 50th reunion of the Class of 1940, and C. Marshall Friedman and John McFarland co-chaired activities for the Class of 1964's 25th reunion. Both of these classes presented substantial gifts to the School. The 10th reunion of the Class of 1980 was organized by Thomas Newmark.

The Eliot Society Committee, chaired again this year by Donald P. Gallop, J.D. '59, worked effectively to increase membership of law alumni in the Eliot Society. Bert Tremayne, J.D. '38, again chaired the Annual Giving Committee. Through the combined efforts of these two committees and many other volunteers, we achieved an all-time high in annual giving for the School. The Law Alumni Association, presided over by Dale L. Cammon, J.D. '65, provided organization and support for Century Club breakfasts, the alumni student recruiting network, the revived "Take a Law Student to Lunch" program, and the reunion and development committees. The Minority Alumni Affairs Committee, chaired by Nadine Nunn, J.D. '83, has aided the School's efforts to attract and retain minority students.

A new *School of Law Alumni Directory* was compiled and mailed to all graduates.

The School's National Council met twice during the year, with some of its committees meeting more often. It has advised us on student recruitment and admissions, on the operations and programs of our Career Services Office, and on alumni and development activities.

Alumni events were held in Minneapolis, Chicago, Washington, D.C., and in conjunction with the ABA meeting in Honolulu. We have held 11 meetings with more than 150 alumni across the country to discuss the future of the School, and the information we have received has been encouraging.

A number of very special gifts were received during the year. Gladys Stamm Boester, J.D. '31, donated an endowed scholarship for women law students, and an anonymous donor created the Gustavus A. Buder Scholarship for American Indian law students. James M. Canavan, J.D. '25, and his wife made a substantial unrestricted gift to the School, and in celebration of his 90th birthday, Israel Treiman, J.D. '24, created the endowed Treiman Faculty Fellowship.

Dorsey D. Ellis, Jr.

Dean
School of Law

School of Medicine

In M. Kenton King, M.D., as dean, and Samuel B. Guze, M.D., as vice chancellor for medical affairs, the School of Medicine has enjoyed remarkable leadership. Following their retirement from these positions in 1989-90, Drs. King and Guze continue to do important work; Dr. King will chair the program committee for the School's centennial celebration in 1991, and Dr. Guze is continuing his research, teaching, and patient care in the Department of Psychiatry.

There will be many events during the centennial year, climaxed by a three-day celebration in October 1991. An issue of the *Journal of the American Medical Association* will be devoted to the centennial and will be edited by David M. Kipnis, M.D., Adolphus Busch Professor and head of the Department of Medicine.

Faculty News

Ralph G. Dacey, Jr., M.D., has been named professor and head of neurological surgery and co-head of the Department of Neurology and Neurological Surgery.

Staffan Normark, M.D., was named professor and head of the Department of Molecular Biology, succeeding Milton J. Schlesinger, Ph.D.

Harvey R. Colten, M.D., and C. Robert Cloninger, M.D., were elected to the prestigious Institute of Medicine of the National Academy of Sciences. The School now has 16 faculty members in the Institute.

Jack R. Hessler, D.V.M., was named assistant vice chancellor for veterinary affairs and director of the division of comparative medicine.

Steven M. Rothman, M.D., associate professor of pediatric neurology, received the prestigious Javits Neuroscience Investigator Award from the U.S. Congress.

Stuart A. Kornfeld, M.D., professor of biological chemistry and medicine, was the 1989 Harden Jubilee lecturer and medalist, one of the highest honors given by the British Biochemical Society.

Michael M. Karl, M.D., professor of clinical medicine and Director of Clinical Affairs in the Department of Medicine, received the Ralph O.

Claypoole, Sr., Memorial Award from the American College of Physicians.

Schizophrenia researcher Terrence Early, M.D., assistant professor of psychiatry, was named the first Gregory B. Couch Scholar at the School.

James B. Lefkowitz, M.D., assistant professor of medicine and pharmacology, was designated the 1990 Clinical Pharmacology Scholar by the Burroughs Wellcome Fund.

Jeffrey I. Gordon, M.D., professor of medicine and biochemistry and molecular biophysics, received the Young Investigator Award from the American Federation for Clinical Research.

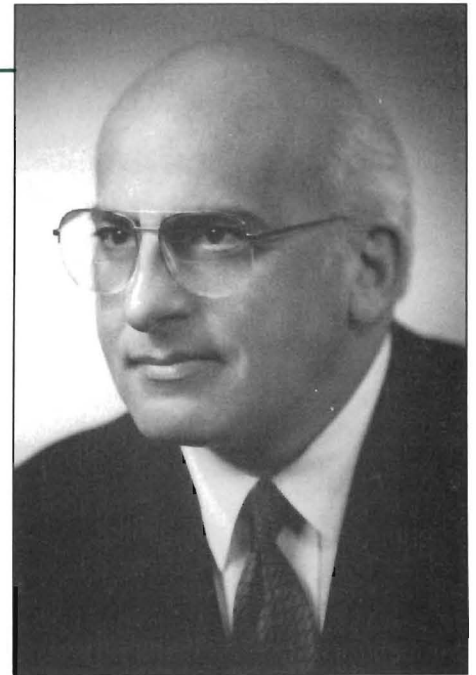
James O. Hepner, Ph.D., professor of health administration and director of the graduate health administration program, began a three-year term as chairman-elect of the 22,000-member American College of Healthcare Executives.

Kenneth M. Ludmerer, M.D., associate professor of medicine, has been elected a fellow of the American Association for the Advancement of Science. Ludmerer, author of the highly acclaimed book *Learning to Heal*, is writing his third book—on developments in medical education since 1925.

Five School of Medicine researchers received coveted MERIT status for their grants from the National Institutes of Health. They are: Arthur D. Loewy, Ph.D., who conducts research into the neural mechanisms involved in cardiovascular control; Bradley T. Thach, M.D., who investigates causes of Sudden Infant Death Syndrome (SIDS); Philip W. Majerus, M.D., whose research involves blood cells' response to environmental signals, especially in clotting; and Stuart A. Kornfeld, M.D., and Rosalind Kornfeld, Ph.D., who investigate metabolic disorders.

Research

The School has been designated as a Specialized Center of Research (SCOR) in Coronary and Vascular Diseases and awarded a five-year SCOR grant of \$18.6 million from the National Heart, Lung and Blood Institute. The SCOR grant is directed by Burton E. Sobel, M.D., Tobias and Hortense Lewis Professor of Cardiovascular Diseases and director of



William A. Peck

the cardiovascular division.

Theodore Reich, M.D., Samuel and Mae S. Ludwig Professor of Psychiatry and professor of genetics, has been awarded four grants totaling \$6.8 million from the National Institute on Alcohol Abuse and Alcoholism and the National Institute of Mental Health for his studies of genetic factors related to alcoholism and depression.

Leonard Berg, M.D., professor of neurology, and John C. Morris, M.D., assistant professor of neurology, received a five-year grant renewal of \$4 million for studies of intellectual functions in older adults.

The National Institute on Drug Abuse has awarded \$3.5 million to the School for research into methods of preventing the spread of HIV infection among intravenous drug users in the St. Louis area. Epidemiologist Linda B. Cottler, Ph.D., is the principal investigator.

Bradley T. Thach, M.D., professor of pediatrics, has received \$740,000 from the National Institute of Child Health and Human Development, part of the NIH, to continue his research into Sudden Infant Death Syndrome (SIDS).

The Monsanto Fund, the philanthropic arm of Monsanto Company, has provided \$600,000 for scholarships for minority students in the Medical Scientist Training Program (MSTP).

Research support from government and private sources was greater this year than ever before. Total

government research and training support was more than \$95 million, up 9 percent from the previous year. Our NIH support was distributed across more than 485 grants and contracts. This places us in the top five medical schools and health institutions that receive government funding.

Students

The School received more than 3,500 applications for enrollment and accepted 118 students into the 1989-90 first-year class. The ratio of almost 30 applicants per position remained stable. More than 93 percent of the students admitted have one or more acceptances at other U.S. medical schools. Forty-three states, the District of Columbia, and four foreign countries are represented in the current enrollment.

In 1990, the School conferred 113 M.D. degrees. Two students earned M.S./M.D. degrees, and 19 students earned combined M.D./Ph.D. degrees. The combined M.D./Ph.D. program is now among the largest operated by any North American university. Graduating students who participated in the 1990 National Residency Matching Program matched one of their top three choices in 83 percent of the cases; 63 percent obtained their first choice.

The student body currently numbers 530. Programs also are conducted for 331 students in health administration, nurse anesthesia, occupational therapy, physical therapy, and radiologic technology. The Division of Biology and Biomedical Sciences has 211 students seeking Ph.D. degrees in cell biology, evolutionary and population biology, molecular biology, immunology, neural sciences, and plant biology.

Fifty students participated in Students Teaching AIDS to Students (STATS), serving as teachers for seventh and eighth graders. In the company of AIDS patients, the medical students visited an area middle school to educate 12-year-olds before they begin behaviors that put them at risk.

Administration

Lee F. Fetter, assistant vice chancellor for medical affairs, was named associate vice chancellor and associate dean for administration and finance.

Patricia L. Cole, M.D., and W. Edwin Dodson, M.D., have been named associate dean for student affairs and associate dean for admissions, respectively. The two assume joint



Harvey R. Colten, Harriet B. Spoebrer Professor of Pediatrics and head of the Department of Pediatrics, was elected this year to the Institute of Medicine of the National Academy of Sciences.

responsibility for the position previously held by John C. Herweg, M.D., who retired June 30, after 25 years of outstanding service.

Carl D. Rhodes, Ph.D., was appointed associate dean of the medical school, associate dean of the graduate school of arts and sciences, and associate director of the division of biology and biomedical sciences. He will oversee the recruitment of Ph.D. and M.D./Ph.D. students.

Valorie J. Hambley has been appointed assistant dean for administration. Glenda K. Wiman assumed the office of assistant dean for special programs. Thomas R. Sonderegger was promoted to assistant vice chancellor and assistant dean for planning.

Gifts and Alumni Support

The School continued to receive support from friends and alumni as well as from family foundations and the Alumni Association. Such giving is vital to the School.

During fiscal 1989-90, almost \$25

million in both restricted and unrestricted gifts was received. Prominent among those areas receiving support were the Library and Biomedical Communications Center, the Human Genome Project, other faculty research efforts, and student financial aid.

This year, with nearly 40 percent of M.D. alumni participating, they gave \$682,949 of our \$992,808 Annual Fund. Alumni giving to all areas in the School amounted to more than \$3.3 million.

Your generosity and continuing interest augur well for the School's second century. The support of so many gives us added strength of purpose, and our gratitude goes to those donors of vision who not only made the School's first 100 years possible but also have helped to make them outstanding.

William A. Peck
Dean
School of Medicine

George Warren Brown

School of Social Work

If the 1989-90 academic year is indicative of the new decade, the 1990s are going to be a period of growth, exciting new projects, and increased public visibility for the George Warren Brown School of Social Work.

The year began on the right note: MSW enrollment increased 13 percent over 1988-89 and was the highest in the last 10 years. It also ended on the right note: applications for next year were running 26 percent ahead of the previous year. Between the beginning and the end, the year was studded with noteworthy events and achievements.

Students and Alumni

Many GWB students received recognition. A report on the working poor prepared by a group of seven students was covered widely by local print and electronic media. Clare Anne Jacobsmeier, who graduated in May 1990, was selected as a Presidential Management Intern; her first posting is in the Department of Housing and Urban Development. Sandra J. Wilkie, a first-year student, was elected to the board of directors of the 125,000-member National Association of Social Workers.

Students organized a one-day professional conference titled "Springing into the 90s - Professional Development for MSWs," in which such topics as adolescent suicide, AIDS-related services in St. Louis, depression in women, wellness and the environment, employee assistance programs, and chronic illness and the family were discussed. The Student Council and the GWB Placement Office cosponsored a professional development series in which a number of local experts spoke on "Testifying in Court," "Planning for a Private Practice," and "Writing for the Media."

The GWB Alumni Association gave the Outstanding Alumni Award to Mary Taussig Hall, MSW '38, one of the earliest and most illustrious graduates of the School. The Alumni Association also sponsored a well-attended lecture by Anna Navarro on "Strategies for Career Satisfaction."

Faculty

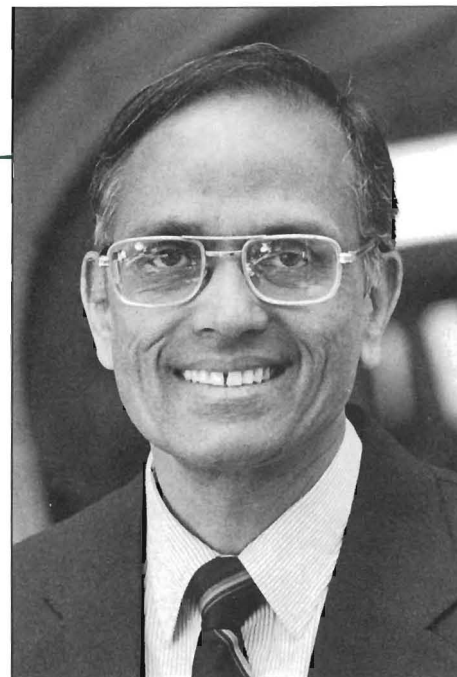
With the death of William E. Gordon, Professor Emeritus of Research in Social Work, the School lost the founder of its doctoral program and a noted social work researcher and theoretician.

As in previous years, scholarly productivity of the faculty, as reflected in their publications of books and papers and presentations at professional meetings, remained impressive. The year proved to be exceptionally rewarding for faculty research projects. The School received more grant support than in any prior year, and two out of three GWB faculty members obtained extramural support for research. Their studies cover a range of health and human service issues such as AIDS, intergenerational transfer of resources, interracial relations, preparedness for natural disasters, prevention of alcoholism and smoking, home care plans for chronically ill elderly, racial attitudes, donor transplant patterns, and others.

At GWB we value good teaching no less than rigorous research, and it was a special pleasure to see Assistant Professor Mark Rank receive a Faculty Teaching Award from the Council of Students of Arts and Sciences.

The Youngdahl and Other Lectures

A highlight of the year was the Benjamin E. Youngdahl Lecture in Social Policy, delivered by Dr. Louis W. Sullivan, Secretary, Department of Health and Human Services. Other lecturers representing the fields of corporate management, labor unions, news media, public service, and social work included: Nancy Amidei, consultant, Washington, D.C.; Clarence Barksdale, vice chairman, Board of Trustees, Washington University; Thomas F. Eagleton, former U.S. Senator and University Professor of Public Affairs, Washington University; Richard L. Edwards, president, National Association of Social Workers, and dean, Mandel School of Applied Social Sciences, Case Western Reserve



Shanti K. Khinduka

University; Anna Forder, Missouri Circuit Court Judge, City of St. Louis; Judy A. Hall, associate executive director, National Association of Social Workers; Ray Hartmann, editor, *The Riverfront Times*; Sheila Mosley, executive director, Confluence, St. Louis; William Stodghill, business agent, Local 50, AFL-CIO Service Employees International Union, St. Louis; Susan Uchetille, executive director, Volunteer Inter-District Coordinating Council of St. Louis; and William F. Woo, editor, *St. Louis Post-Dispatch*.

Center for American Indian Studies

Thanks to the generosity and vision of an anonymous St. Louis donor, the School established the Center for American Indian Studies in Social Services, which will enable a carefully selected number of academically qualified Native American students to receive graduate education in social work. Upon graduation, these individuals will be able to assume key positions in social service and governmental agencies dedicated to improving the lives of Native Americans. Dana Wilson Klar, MSW and JD '89, has been appointed director of the Center.



Dr. Louis W. Sullivan (left), Secretary, Department of Health and Human Services, greets students at his Youngdahl Lecture as Dean Shanti K. Khinduka looks on.

Planning for the Future

The School established 12 additional endowed scholarships last year; provision of financial aid to students will remain a top priority of GWB for the foreseeable future.

With the increase in enrollment and faculty research activities and with the establishment of new programs like the Center for American Indian Studies in Social Services, the School is running out of space in Brown Hall, and one of our immediate needs is to find additional space. Another priority will be the expansion of the doctoral program. As a school with one of the oldest doctoral programs in social work, GWB recognizes its obligation to prepare the future teachers and leaders of the profession. Accordingly, a gradual increase in the size of the PhD program will be part of our growth plan for the next decade.

For several years the faculty has been examining ways to strengthen further

the practice component of the MSW curriculum. One approach is to offer additional opportunities for refinement of intervention skills with individuals, families, groups, and communities through an innovative laboratory for social work skills. I anticipate that, when additional space is available, such a laboratory will become a reality.

The previous decade has not exactly been kind to social work schools. Federal social policies, reduction in training grants, and decline in student enrollment have hurt schools of social work, including GWB. Although not hostile to GWB, many supporters of the University have remained either unaware of or indifferent to the contribution or potential of the School.

However, there are encouraging signs that the situation is changing. Applications are up. Enrollment has increased. The job market for our graduates has improved. Faculty members are becoming more successful in securing research funds.

Corporations are showing greater interest in having social work interns. Donors are willing to establish new programs. Members of the Social Work National Council are actively helping the School, not only by their advice, but also by serving as its advocates and interpreters to outside groups.

As a result of these and other developments, I believe the 1990s will see GWB become even stronger, with a faculty even more distinguished, a student body even more diverse, altruistic, and talented, a curriculum even more dynamic and relevant, and a resource base that is adequate for implementing the exciting plans we are making for a more vibrant future.

Shanti K. Khinduka

Dean
George Warren Brown
School of Social Work

On August 1 of last year, I took over as dean from Interim Dean Burton M. Wheeler, who returned full-time to his faculty position. Professor Wheeler's distinguished stewardship of the Libraries made my responsibilities on arrival much less weighty than they might have been.

I am delighted to report that the year 1989-90 has been a year of continual improvement in collections and services in the Olin Library System. We are building a library system to match the excellence of the University. We are also positioning ourselves to thrive in an uncertain world—where the volume of print information grows far faster than we can manage it, and where electronic information is pervasive. In this year we made immediate improvements—in collections, staffing, physical plant, technology, and services—and we are planning for our future, working out a common vision of what we strive to be.

Funding and Support

The year began with an 18 percent budget increase designed to strengthen our acquisitions, staff, equipment, and electronic activities, and a gift of \$1 million from Mrs. John S. Lehmann to begin space planning. The year ended with a substantial budget increase for next year, the announcement of a gift of more than \$1 million for collections and space from the estate of Carl Neureuther, and the acquisition of 80,000 square feet of space through the University's intended purchase of the Clayton Famous Barr store. Frayda and Ronald Feldman of the Parents Council provided us with funds to add videos to the Art and Architecture Library. The Libraries continue to be enriched by the generous support of friends, alumni, parents, and a growing number of Eliot Society members.

Collections and Services

This year we increased acquisitions budgets for all areas where there is continuing emphasis and growth. We

were able to make substantial increases in book purchases and to add 200 necessary journal subscriptions. We also canvassed the faculty and students to identify gaps, which we are now filling. We are responding to increasing faculty and student needs for materials in non-print formats, especially video and electronic. We have upgraded equipment—microform readers, printers for online catalog terminals, videotape players, and photocopiers—making faculty and student use of our collections more efficient.

To provide access to materials that we need but do not own, we have enhanced our interlibrary loan service with added staff, space, and resources. Our faculty and students now have access to OCLC, an online catalog that contains information on 20 million titles held by 10,000 libraries. Using this catalog, faculty and students can look up books they haven't found in our collections, see which other libraries have the books, and have us borrow the books for them. We are also experimenting in our Chemistry Library with providing online access to journal articles, with copies on demand, as an alternative to subscribing to some expensive, highly specialized journals.

Staff and Facilities

Excellent staff are critical to excellent libraries. We have reorganized the libraries to improve internal communications, provide flexibility, and encourage innovation. New senior positions were established: Nicholas Burckel became associate dean for Collections and Services; Virginia Toliver became director for Administration and Planning; and we are searching nationally for a director for Computing and Telecommunications. We have also made changes at other levels and instituted a recruiting program designed to bring us the most talented librarians. We have designed an ongoing program of staff development and skill upgrade that is getting national attention.



Shirley K. Baker

Recognizing that almost every library staff member uses computers in his or her daily work, we have added microcomputers in many work areas to maximize staff productivity. By the end of the summer we expect to have electronic mail links that will allow us to talk to each other, the University, and the information world.

We have expanded our use of NOTIS, the automated system that controls our internal operations and online catalog. In this year we have brought up both the circulation and acquisitions modules. New cataloging staff are adding information about our journal holdings to our online catalog, and we are experimenting with adding records for the government publications in our libraries. The goal is to have the online catalog represent the complete holdings of the libraries. Support is growing daily for remote catalog access, which allows users to connect to the online catalog from their offices or dormitories.

We have made improvements in our existing physical facilities—painting, carpeting, drapes, shelving, furniture, and use of space—and have begun to plan for use of the Famous Barr facility. We expect to use the Famous Barr building as a secondary location for library materials, placing there books now in remote storage and moving

books from libraries on the Hilltop Campus there on a regular basis. We will work to complete our online catalog by the time we open the facility, so that, through access to our online catalog, a user can see in which library a book is, see if that book is on the shelf or charged out, and request delivery of the book or a photocopy (or, increasingly, a telefacsimile) of a journal article. We also will have a reading room in the Famous facility. The University's planned shuttle service will allow easy transportation for users and materials between the Famous Barr site and other campus locations.

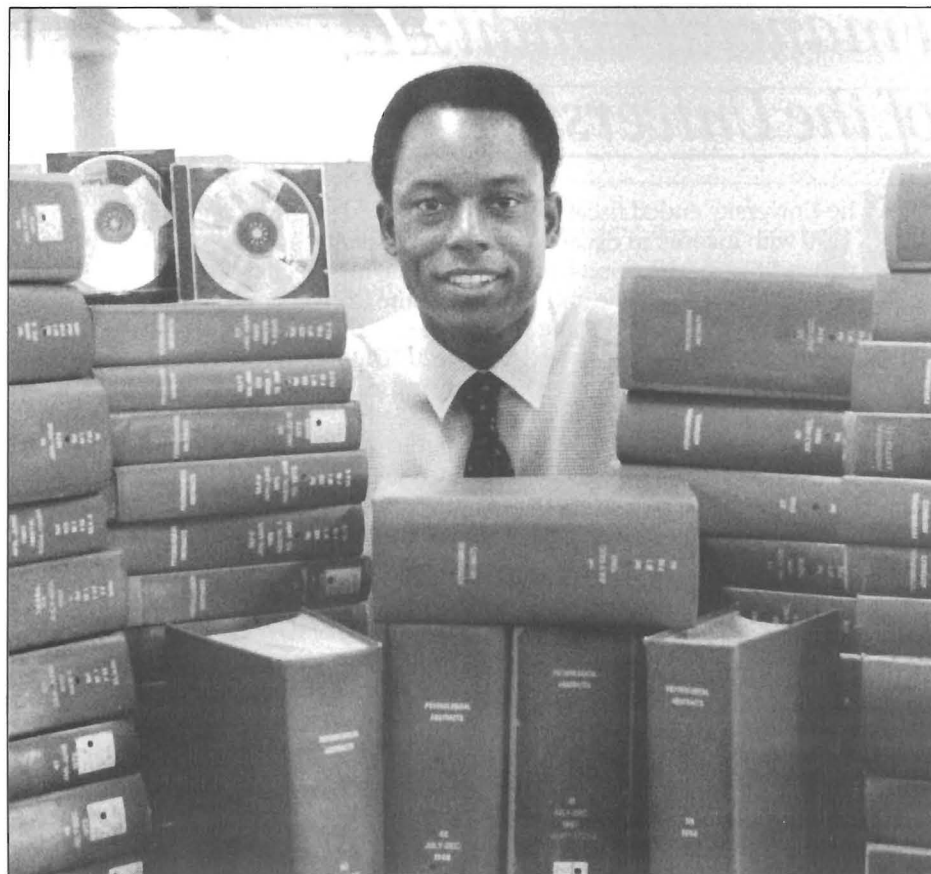
Outreach and Communication

This year we have been listening intently to our community. Through our Faculty Committee, the Library Council, the Student Committee on Olin Library, and the Graduate Student Organization, we have been discussing and responding to users' needs. I have also been meeting with deans, department heads, individual faculty members, and administrators to glean information about the University and its programs to guide library planning. Recently, we met with the Libraries' National Council to discuss accomplishments and directions. Our Bookmark Society, now in its fifth year, continues to offer literary programs and activities for the community.

With additional reference librarians and bibliographers, we have been able to strengthen our programs to reach out to faculty and students. We are now better able to work with faculty members to identify opportunities for helping them and their students learn to use the libraries for their current and continuing education. We have published two guides to the libraries, have enhanced our brochure series on library services (especially for electronic materials and access), and have begun a subject-oriented bibliography series that responds to faculty requests.

Cooperation

Many of the challenges faced by university libraries cannot be surmounted by individual institutions working alone. To create the richest



Rudolph Clay, Librarian Supervisor—Reference Unit, displays the Olin Library System's use of modern technology. Everything in the 42 volumes displayed is electronically stored on two CD-ROM disks (upper left).

collections, we must build alliances across local, regional, national, and international boundaries, so that we can share our resources as a treasure of information that no individual institution can afford. Toward this, we are strengthening our informal and formal links, announcing our willingness to cooperate.

To preserve our historic collections, we must act locally and internationally. Here we have continued our preservation program and this year, with sponsorship from the Burlington Northern Foundation, produced a series of lectures for the community on preservation issues. Washington University has also contributed to the national preservation effort with financial support for the Commission on Preservation and Access, which is working to preserve millions of deteriorating books over the coming decades and guarantee broad access to them.

To build the links to support communication among scholars,

libraries, and information, we have joined with our colleagues nationwide in supporting the Coalition for Networked Information, which is working toward guaranteeing appropriate access to scholarly information through current and future electronic networks.

Summary

This has been an exciting and challenging year. We have made significant progress toward a new standard of library collections and services and will continue our efforts in coming years. We expect within a few years to have built on our strengths and created a library system capable of meeting the information needs of coming generations of faculty and students.

Shirley K. Baker

Dean
University Libraries

Financial Condition of the University

The University ended fiscal year 1990 with income in excess of expenditures. Below is a brief analysis of total income and expenditures, operations of separate fiscal units, and University assets and investments.

Total Income and Expenditures from Current Funds

The University has four major sources of income which support its activities. These are:

Operating Income

Operating income, primarily from payments by those who benefited directly from the University's operation, amounted to \$384,048,000. Student tuition and fees accounted for \$115,529,000. Patient and laboratory fees for medical services provided by faculty and staff amounted to \$112,151,000. Income from organized patient-care activities, such as the Edward Mallinckrodt Institute of Radiology, was \$72,948,000. The auxiliary enterprises, including residence halls, food service, and bookstores, had income of \$25,454,000. Sales and services of educational activities amounted to \$28,103,000. Current funds investment income was \$15,335,000, and other miscellaneous operating income totaled \$14,528,000.

Government Grants and Contracts

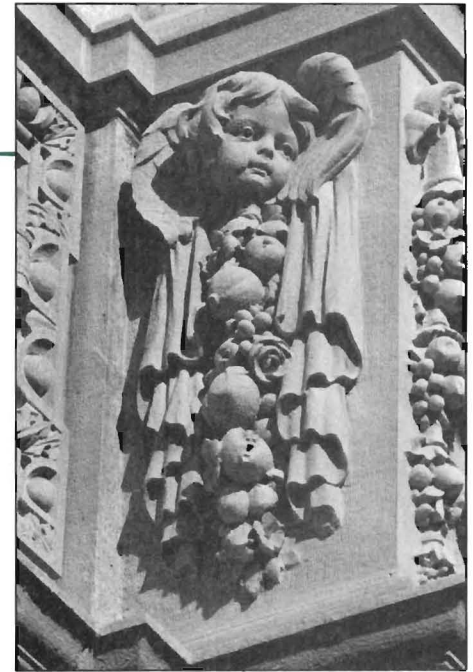
A large portion of the research performed by the University is

sponsored by grants and contracts from governmental agencies, primarily federal, for specific projects. Total income from governmental sources expended in fiscal year 1990 was \$120,761,000, an increase of \$9,725,000 over fiscal year 1989. Scholarships and traineeships accounted for \$9,936,000 of the total and \$917,000 of the increase. In addition, 90 percent of the total \$4,234,000 student loan funds issued under the Perkins and Health Professions Loan Programs was funded by the federal government.

Private Gifts, Grants, and Contracts

Washington University received a total of \$49,603,000 in gifts and grants from private sources for various purposes. Major sources include alumni, individuals, business corporations, and foundations. The charts below present a breakdown of the total gifts, grants, and bequests received by source and purpose. The total \$49,603,000 was divided as follows: \$31,006,000 for operating purposes which includes \$1,951,000 in unrestricted gifts and \$29,055,000 for sponsored research, other sponsored programs, and scholarships; \$14,441,000 for endowment; \$3,936,000 for plant including gifts in kind; and \$220,000 for student loans. In the charts, \$1,704,000 in scholarships is combined with \$220,000 in loans for total student aid of \$1,924,000.

In addition to these private gift sources, the University also receives

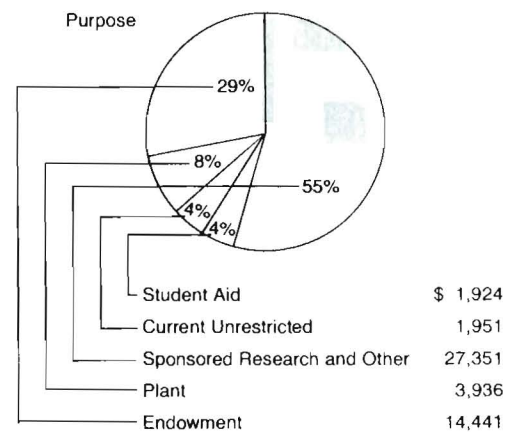
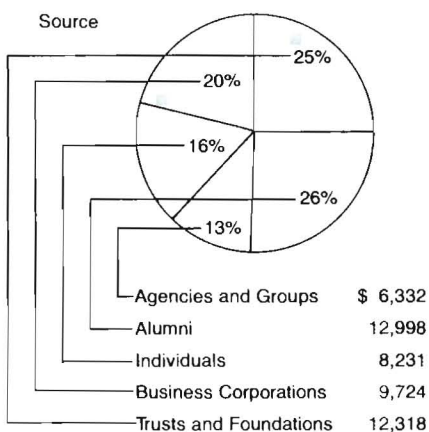


funds through private contracts for sponsored projects. In fiscal year 1990 these contracts amounted to \$17,644,000 which, when added to the \$29,055,000 referred to above, brings the total for sponsored programs to \$46,699,000. Of this total, \$4,616,000 is being held for future expenses on sponsored programs. The remaining \$42,083,000 was expended for current operations in fiscal year 1990 and, combined with the \$1,951,000 in unrestricted gifts, brings the total private gift, grant and contract income utilized for operating purposes to \$44,034,000. The ten-year chart on this page reflects a large bequest in 1981.

Endowment

The investment of endowed funds resulted in \$40,532,000 of income used to support operating expenditures.

Private Gifts, Grants and Bequests Received—\$49,603 (Thousands of Dollars)



The total current funds expenditures of Washington University in fiscal year 1990 amounted to \$545,304,000, compared with \$482,755,000 in 1989. Approximately 55 percent of the increased expenditures was attributable to instruction and student aid. Organized patient-care activities accounted for 16 percent; research 15 percent; and another 5 percent was attributable to academic support.

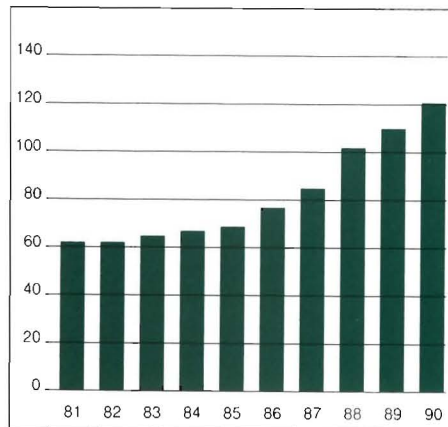
Included in operating expenditures is student aid (scholarships, fellowships, and stipends) amounting to \$44,760,000 from University income and from governmental and private sources, but excluding College Work Study and the State of Missouri Student Grant Program. The summary on page 30 reflects undergraduate financial aid for the past three years.

Student loans and capital expenditures for buildings are not expended from current funds—their sources are separate fund categories. All student loans issued during fiscal year 1990 totaled \$5,779,000. Net capital expenditures for buildings were \$39,457,000. Investments in all physical facilities, including buildings, land, equipment, and library acquisitions, increased \$66,627,000.

Operation of Separate Fiscal Units

The Trustees of the University have a policy under which each of the schools operates as a distinct fiscal unit. Under the policy, which is called the "reserve school system," the income and expenditures are reported separately for each unit and each maintains its

Income Expended from Government Grants and Contracts

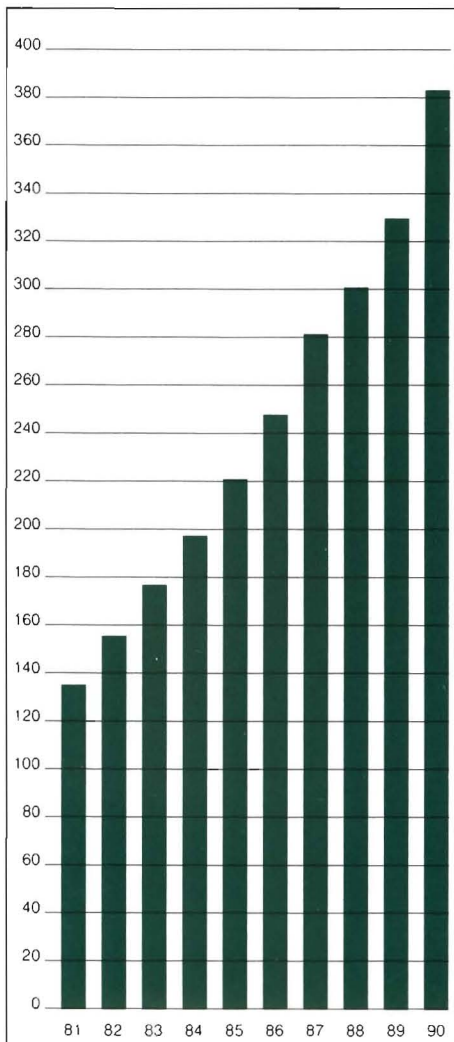


Ten-Year Comparisons

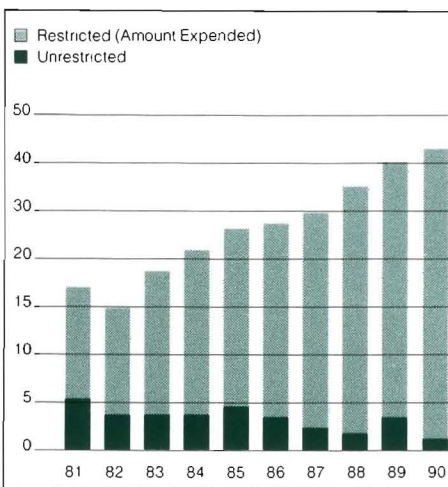
Millions of Dollars

Operating Income by Source

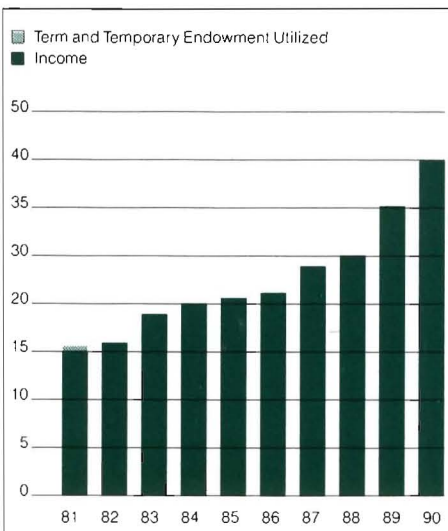
Revenue from Tuition and Services



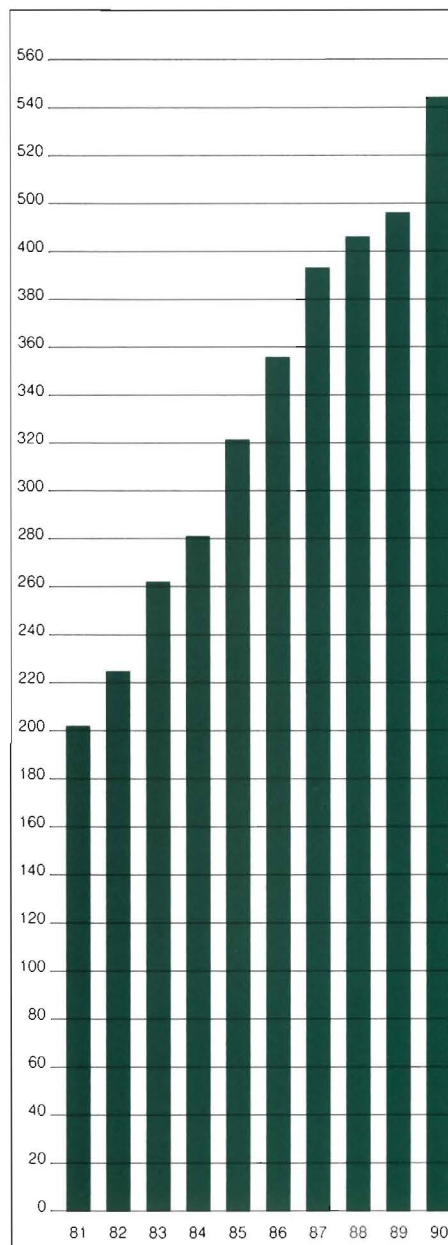
Operating Income From Private Gifts, Grants, Contracts, and Bequests



Endowment Resources Appropriated for Operating Purposes



Annual Expenditures Total Operating Expenditures



Washington University

Summary of Current Funds Revenues, Expenditures, Transfers and Changes in General Reserves for Separate Fiscal Units for Fiscal Year 1990

Thousands of Dollars

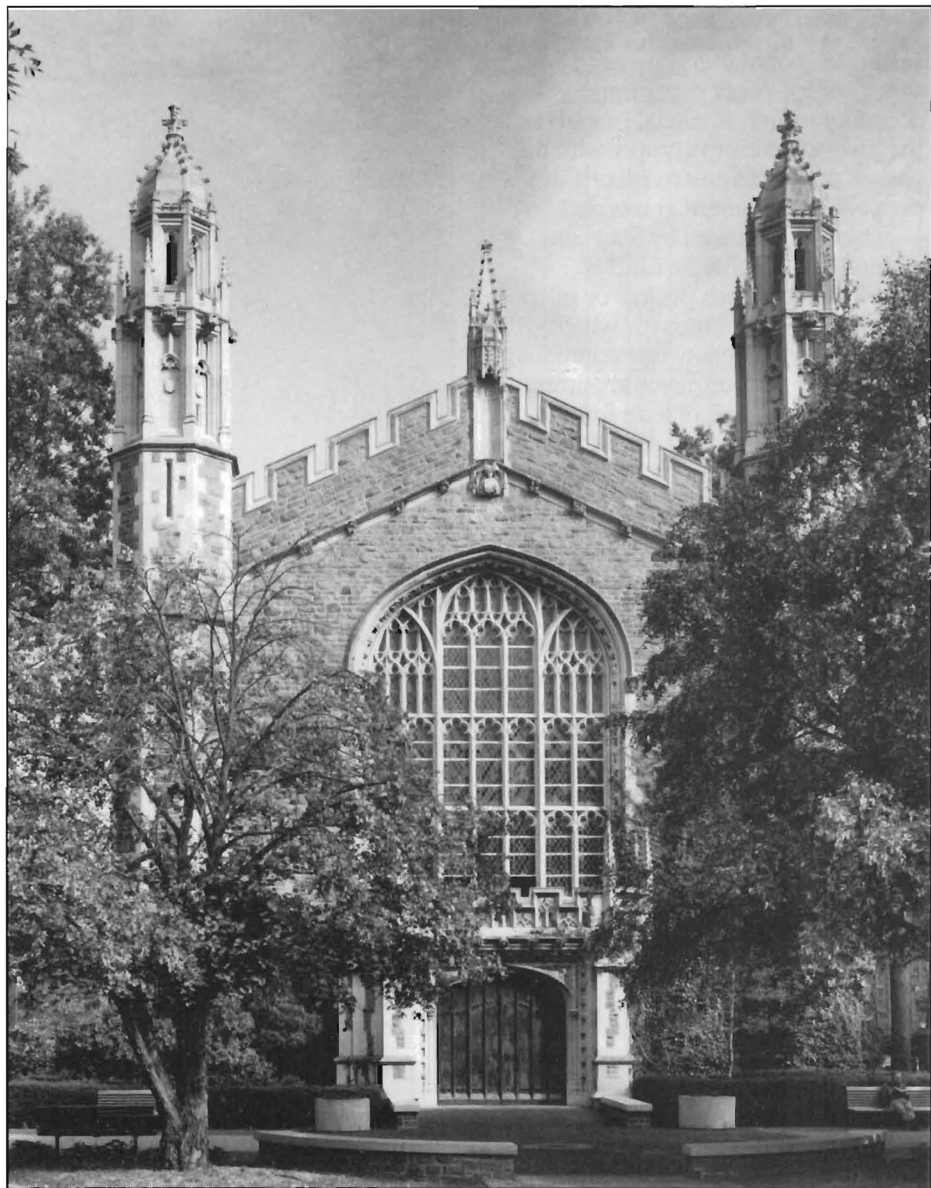
Total	Central Fiscal Unit	Faculty of Arts and Sciences	School of Architecture	School of Business	School of Engineering	School of Fine Arts	School of Law	
Revenues:								
\$ 115,529	Tuition and Fees..... \$ 577	\$ 48,101	\$4,690	\$14,726	\$19,515	\$4,468	\$ 8,690	
120,761	Government Grants and Contracts (Research, Training, Financial Aid to Students, and Other Purposes)	2,386	16,302	95	99	2,257	38	20
44,034	Private Gifts, Grants and Contracts	1,750	5,676	156	1,983	5,137	210	484
40,532	Endowment Income (A)(B)	6,157	10,626	314	1,257	2,381	236	704
15,335	Current Funds Investment Income	2,238	885	103	181	204	41	183
28,103	Sales and Services— Educational Activities.....	1,586	957	11	262	3,404	37	34
25,454	Sales and Services— Auxiliary Enterprises	22,690						
112,151	Patient and Laboratory Fees..... Organized Patient Care Activities—							
72,948	Sales and Services							
14,528	Other Income and Additions.....	3,821	1,285	61	6	327	19	101
\$ 589,375	Total Revenues	\$ 41,205	\$ 83,832	\$5,430	\$18,514	\$33,225	\$5,049	\$10,216
Expenditures and Mandatory Transfers:								
\$ 214,036	Instruction	\$ 572	\$ 26,889	\$2,819	\$ 8,538	\$15,494	\$2,115	\$ 3,276
93,476	Research.....	57	12,486	49	33	3,443		
37,349	Academic Support	(771)	10,635	580	3,397	3,670	887	3,166
12,976	Student Services	1,346	4,837	147	1,528	1,543	281	460
22,577	Institutional Support	3,808	4,624	183	1,112	1,442	239	603
36,724	Operation and Maintenance of Physical Plant.....	(1,012)	7,240	339	1,174	1,840	574	938
35,425	Scholarships and Fellowships	2,722	17,200	1,050	2,774	5,517	1,094	1,707
59,072	Organized Patient Care Activities							
21,760	Auxiliary Enterprises.....	19,404						
42	Miscellaneous Services.....	2	8	29				
11,867	Mandatory Transfers	4,963	432		165	436		
\$ 545,304	Total Expenditures and Mandatory Transfers	\$ 31,091	\$ 84,351	\$5,196	\$18,721	\$33,385	\$5,190	\$10,150
\$ 43,340	Transfers to committed reserves, plant, and other funds from revenues and prior years' accumulated reserves	\$ 9,894	\$ (519)	\$ 101	\$ (258)	\$ (160)	\$ (377)	\$ 65
\$ 588,644	Total Expenditures and Transfers	\$ 40,985	\$ 83,832	\$5,297	\$18,463	\$33,225	\$4,813	\$10,215
\$ 731	Net effect of revenues, expenditures, and transfers on General Reserves	\$ 220	\$ 0	\$ 133	\$ 51	\$ 0	\$ 236	\$ 1

(A) Endowment at Market Value with Income for:

\$1,155,129	Support of Current Operations.....	\$405,629	\$125,266	\$7,454	\$32,543	\$46,617	\$7,299	\$18,313
231,717	Other Purposes	152,267	27,039	702	12,300	5,148	505	18,112
\$1,386,846	Total Endowment.....	\$557,896	\$152,305	\$8,156	\$44,843	\$51,765	\$7,804	\$36,425

(B) A portion of the Central Fiscal Unit endowment income is distributed to several schools.

School of Social Work	School of Dental Medicine	School of Medicine and Related Activities	Institute of Biomedical Computing
\$ 2,667	\$ 2,004	\$ 10,091	\$
583	704	95,874	2,403
28	310	28,300	
726	33	18,098	
97	(88)	11,455	36
10	19	21,662	121
		2,764	
	789	111,362	
		72,948	
5	33	8,858	12
<u>\$ 4,116</u>	<u>\$ 3,804</u>	<u>\$381,412</u>	<u>\$2,572</u>
\$ 805	\$ 3,555	\$149,384	\$ 589
366	501	75,139	1,402
904	2,111	12,439	331
314	186	2,335	(1)
207	340	9,923	96
238	760	24,355	278
433	86	2,842	
		59,072	
		2,356	
		3	
	1	5,870	
<u>\$ 3,267</u>	<u>\$ 7,540</u>	<u>\$343,718</u>	<u>\$2,695</u>
<u>\$ 652</u>	<u>\$(1,181)</u>	<u>\$ 35,152</u>	<u>\$ (29)</u>
<u>\$ 3,919</u>	<u>\$ 6,359</u>	<u>\$378,870</u>	<u>\$2,666</u>
<u>\$ 197</u>	<u>\$(2,555)</u>	<u>\$ 2,542</u>	<u>\$ (94)</u>
\$19,116	\$ 1,243	\$491,649	\$
71	2,722	12,851	
<u>\$19,187</u>	<u>\$ 3,965</u>	<u>\$504,500</u>	<u>\$ 0</u>



own individual reserves which are increased by any operating surpluses and decreased by any operating losses.

General University services and activities such as Olin Library are grouped in one fiscal entity referred to as the Central Fiscal Unit. The Central Fiscal Unit is reimbursed for services rendered to the other units.

The Faculty of Arts and Sciences and the School of Engineering ended the year with no change in their general

reserves. The School of Dental Medicine and the Institute of Biomedical Computing ended the fiscal year with a reduction in general reserves. All other Schools, as well as the Central Fiscal Unit, ended the year with an increase in general reserves.

A summary of Current Funds Revenues, Expenditures, Transfers, and Changes in General Reserves begins on page 28.

University Assets

Institutions of higher education and other not-for-profit organizations account for their financial resources in the form of funds to comply with the wishes of donors and to record properly government grants and contracts, as required by State and Federal law. A separate fund is established for each project or purpose. The thousands of funds for which Washington University is accountable are handled in four major groupings: current funds, student loan funds, endowment funds, and plant funds. With the exception of income from the investment of endowment funds, the operating revenue of current funds may not include resources of the other three fund groupings. The Summary of Assets, Liabilities and Fund Balances as of June 30, 1990, presents the assets and any claims against them for the four fund groupings.

Current funds are separated between unrestricted and restricted funds. The unrestricted current funds consist of revenues from the various income-producing operations of the University, plus unrestricted gifts and unrestricted earnings from endowment. Expenditure of these unrestricted funds is left to the discretion of the University. Other funds available for current operations restrict expenditures to a given department or school, or for special, designated purposes such as research in a specified field or by a specified person. Unrestricted and restricted funds are combined in the overview of current operations of the separate fiscal units presented previously. They are distinct in the accompanying Summary of Assets, Liabilities and Fund Balances.

As of June 30, 1990, the total assets of the current funds were \$329,897,000, including restricted current funds of \$47,525,000 and unrestricted current funds of \$282,372,000. Accounts payable and other such liabilities against unrestricted current funds amounted to \$61,148,000. Another \$151,079,000 of the unrestricted current fund assets was encumbered or otherwise administratively committed for specific future purposes. The net uncommitted general reserves were \$70,145,000.

Student loan funds totaled \$40,421,000. The total student loan fund receivables were \$34,547,000, most of

Summary of Undergraduate Financial Aid (Excluding Loan Funds)

Thousands of Dollars

Fiscal Year	Tuition Remission	Restricted Scholarships	College Work Study	Pell Grants	State of Missouri Grants	Total
1988	\$13,453	\$3,713	\$1,011	\$564	\$686	\$19,427
1989	12,493	3,707	1,332	793	659	18,984
1990	13,405	4,397	1,339	762	611	20,514

Summary of Assets, Liabilities and Fund Balances as of June 30, 1990 (Excluding Agency Funds)

Thousands of Dollars

	Current Funds		Student Loan Funds	Endowment Funds	Plant Funds	Total
	Unrestricted	Restricted				
Assets:						
Cash and securities maturing within thirty days	\$ 67,584	\$15,990	\$ 3,161	\$ 60,512	\$ 75,810	\$ 223,057
Investments at book value	90,924	21,513	2,300	851,668	30,969	997,374
Receivables	113,855	9,995	34,547	3,136	2,259	163,792
Plant facilities					684,157	684,157
Other	10,009	27	413	1,824	2,640	14,913
Total Assets ..	\$282,372	\$47,525	\$40,421	\$917,140	\$795,835	\$2,083,293
Liabilities and Fund Balances:						
Liabilities	\$ 61,148	\$ 375	\$ 16	\$ 1,844	\$225,761	\$ 289,144
Deferred undistributed investment income		18			5	23
Encumbered and committed reserves	151,079					151,079
General reserves	70,145					70,145
Balance of funds		47,132	40,405	915,296	570,069	1,572,902
Total Liabilities and Fund Balances ...	\$282,372	\$47,525	\$40,421	\$917,140	\$795,835	\$2,083,293

which were notes receivable from current and former students. Outstanding loans to students included \$27,684,000 under the Perkins and Health Professions Loan Programs, which were 90 percent funded by the federal government.

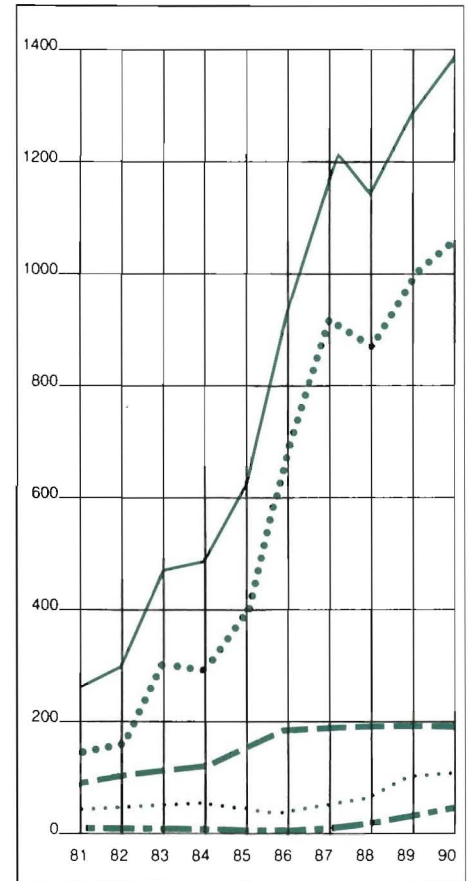
The total assets of the endowment fund at book value were \$917,140,000, including \$912,180,000 in cash and investments. The market value of endowment investments, \$1,386,918,000, associated with each of

the separate fiscal units is presented along with the summary of expenditures and income for each unit.

Plant funds totaled \$795,835,000. Of that amount, \$684,157,000 was invested in land, buildings, books, and equipment. Total borrowings for physical plant facilities as of June 30, 1990, were \$215,711,000, of which \$5,403,000 represents Housing and Urban Development bonds for student housing and dining facilities; and \$209,415,000 represents bonds issued



**Market Value of Endowment Funds
Fiscal Years Ended June 30
Millions of Dollars**



— Total
 Equities
 - - - - - Fixed Income
 - Short-term
 - - - - - Real Estate

by the Health and Educational Facilities Authority of the State of Missouri to finance partially the construction and improvement of certain educational facilities.

Investments

Income (interest, dividends, rents, etc.) from all investments for the year ended June 30, 1990, totaled \$76,646,000 compared to \$68,442,000 for last year. Endowment income for the same period was \$50,383,000 compared to \$47,119,000 for last year.

The market value of all investments (endowment, current, plant, student loans, etc.) including cash, interfund advances (loans), and those securities maturing within 30 days totaled \$1,729,900,000 compared to \$1,666,700,000 for the preceding year.

The market value of endowment funds was \$1,386,846,000 on June 30, 1990, compared to \$1,315,467,000 the preceding year. A comparison of

endowment funds over the past ten years is presented in the accompanying chart.

The increase in market value of endowment funds of \$71,379,000 is the net result of gifts, grants, and net transfers of \$25,444,000, realized market gains of \$19,188,000 and market appreciation of \$26,747,000. These last two numbers indicate a net portfolio gain for the year of \$45,935,000.

On June 30, 1990, the endowment and total investment portfolios were diversified as follows:

	Endowment	Total Investments
Cash and Short-Term Securities	7.8%	18.9%
Fixed Income	14.1%	18.0%
Equities	75.9%	60.9%
Real Estate and Other	2.2%	2.2%
	<u>100.0%</u>	<u>100.0%</u>

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¹Chairman of the Board, President and Chief Executive Officer after January 1, 1990

²Term expired October 13, 1989

³Term expired October 13, 1989

⁴Retired as CEO November 1, 1989 and as Chairman June 1, 1990

⁵President of The Ryland Group, Inc., Columbia, Maryland after May 1, 1990

⁶Retired October 1, 1989

⁷The GR Group, Inc. as of April 6, 1990

⁸Beginning June 1, 1990

⁹Through May 31, 1990

MICHELANGELO

Portrait of the Artist as Entrepreneur

By Patricia Bardon Cadigan

When William E. Wallace talks about Michelangelo, it is in the present tense, as though the artist himself were still a vital presence in the world, living up to his myth as a temperamental genius.

"I'm getting to go through Michelangelo's desk," says the assistant professor of art history and archaeology, describing what he will be doing during the coming year, and, in fact, what has occupied him for the past several years.

Now that the completed restoration of the Sistine Chapel has forced the art world to change its perceptions of Michelangelo's use of color and shading and challenged everyone to see the Renaissance master in a dramatically different way, Wallace is about to throw some light on another, little-publicized aspect of Michelangelo's work.

Reaching new heights: Michelangelo's sketch of himself painting the Sistine ceiling. The artist drew the figure to accompany a sonnet on his brushwork that he sent to a friend. From the Archivio Buonarroti, Biblioteca Laurenziana, Florence.



Wallace was among the youngest of a group of some 50 distinguished international art experts invited by the Vatican to evaluate the Sistine renovation.

In a ground-breaking study that will conclude in Florence next year, he will show that Michelangelo was not the mythological loner who was unable or unwilling to collaborate with assistants on the Sistine Chapel or other gargantuan commissions, but rather a skilled artist-businessman who employed an army of assistants to help him with the many complex projects he undertook during his long and productive life.

Wallace, 38, sits in his office on the second floor of Steinberg Hall on a warm spring day, talking about his interest in Italian Renaissance art and history and in Michelangelo. The academic year is winding down, and there are anxious students to be dealt with. As he talks, he gives his attention to each of several men and women from his classes in Italian Renaissance art and architecture who knock on the office door to ask about papers and exams or to pick up their year-end projects.

After each interruption, he returns to his subject without missing a beat, adding a new thought about the Sistine Chapel restoration, pointing to a Florentine family tree, or digging out a flow chart to illustrate how Michelangelo created his works of art.

Wallace's *Michelangelo: The Artist as Entrepreneur*, to be published by Cambridge University Press in 1991, focuses on the more than 200 assistants hired by Michelangelo to work on three major commissions connected with the Church of San Lorenzo in Florence: the San Lorenzo facade, the Medici Chapel, and the Laurentian Library. These were the largest and most important artistic commissions in 16th-century Florence, and Wallace says they are considered to be among Michelangelo's greatest achievements as a sculptor and architect. Describing and bringing to life the men who worked with Michelangelo on these commissions during the 20 years from 1515 to 1534 also will help to explain the

logistics and organization that were part of creating one of Michelangelo's works of art.

Last March, Wallace was among the youngest of a group of some 50 distinguished international art experts — museum curators, restorers, and art historians — who were invited to Rome by the Vatican to view the completed Sistine ceiling and to spend a week discussing with other Renaissance scholars the plans for the next and more complex phase of the Vatican restoration, the cleaning of Michelangelo's "Last Judgment" on the chapel's altar wall.

On August 1, Wallace returned to Italy, where he is spending his sabbatical year as a fellow at Villa I Tatti in Florence, the Harvard University Center for Renaissance Studies. During the year he will synthesize, sort, and refine raw research material into a polished manuscript. He will attend lectures and meet regularly with other Villa I Tatti fellows who are there to exchange ideas and information about the Italian Renaissance.

Wallace has looked forward to another trip to Italy and relishes the opportunity for his family — his wife, Beth Fagan, and their children, Sam and Katie, ages four and one — to live in Settignano in a villa close to Michelangelo's boyhood home. (Sam Wallace was born in Florence in 1986, the year Wallace began work on the book.)

Wallace's interest in the Italian Renaissance dates back to his junior year at Dickinson College in Carlisle, Pennsylvania, when he visited Italy on spring break. He returned to spend his senior year in Bologna at the Johns Hopkins and Dickinson Center for International Studies. He skipped his graduation ceremony in 1974 because, he says, "I was too in love with Italy to leave." He completed his doctoral dissertation on Michelangelo's drawings at Columbia University in 1983, the year he joined the faculty at Washington University.

He has been working on *Michelangelo: The Artist as Entrepreneur* since 1986, when a National Endowment for the Humanities fellowship enabled him to spend a year poking through the rich archival resources in Florence. An NEH grant to Villa I Tatti is funding his current research.

Patricia Bardon Cadigan is a St. Louis-based writer and former director of public relations for the Saint Louis Art Museum.



Bein Fagan

Dolce vita: Professor William E. Wallace and his son, Sam, touring the streets of Venice in 1987.

Michelangelo drew many of his assistants from Settignano and nearby Fiesole, the towns in the foothills just north of Florence that are known for their rich traditions of craftsmanship. Because housing stock and street names there remain from the Renaissance, it is possible to find even the homes where some of Michelangelo's workers lived.

Wallace points to a map of Settignano: "Eight workers lived next door — here — to six workers who lived — right — here." His finger finds a spot on the map. "Families stay in the same neighborhoods," he says. "If you knock on any door along Via Fancelli, you might find a Fancelli still living there." He knows this from experience; this is one way to pick up local lore that adds color to the characters in his book.

According to Wallace, Michelangelo never operated a conventional workshop in which a young worker is slowly trained through apprenticeship. "However, throughout his career, he employs carefully selected, highly

skilled, and, frequently, related assistants to help him carry out his large commissions."

He believes that he would probably find the Renaissance master difficult — "He didn't even get along with Giorgio Vasari, his friend and biographer, who adored him" — but in spite of Michelangelo's irascible nature, he was somehow able to keep his workers. "That's the paradox," contends Wallace. "He could get along with boyhood friends and in developed family relationships, where trust had already been established. The Italian words *parenti* (relatives), *amici* (friends), and *vicini* (close ones) encapsulate these enduring relationships."

It isn't difficult to reconstruct the lives of these assistants, given the voluminous information available in Florentine archives. Wallace has drawn on bits of information gleaned from more than 1,600 letters to and from the artist, 350 pages of Michelangelo's personal records (shopping, grocery, and laundry lists and rosters of workers), individual tax returns, birth and death

records, and such miscellaneous sources as old maps.

“You can reconstruct biographies of people who lived in 1500,” he says. “You can find where they lived, what taxes they paid, who they married, the names of their children, their salaries, and who their neighbors were.”

Most of the men who worked for Michelangelo were trained professionals hired to do one or more jobs on various projects through the years, Wallace says. “Kinship ties can be established or cited for more than 100 of them, and there are at least a dozen father-and-son teams, more than 12 sets of brothers, and many *compagni*, or professional partners,” he adds.

This raw material will be synthesized to give substance to some of the colorful Renaissance characters who were Michelangelo’s friends and assistants. There is Basso, the son of a farmer, used at first as a gofer, who later developed into a reliable, long-standing assistant. And there’s Ceccone, known as “Big Frank,” a hot-tempered character who had constant fallouts with Michelangelo but to whom Michelangelo assigned increasingly responsible jobs over a 20-year period.

Wallace smiles: “When Michelangelo says in a letter, ‘Shun him like the devil and don’t let him in the house under any pretext’ (until next week, Wallace says, when he apologizes), it shows that here is a person who goes in and out of the house at will, a man Michelangelo has known all his life.”

Wallace has spent so much time with many of these Renaissance rascals that he

The master’s mines: Top, Michelangelo obtained the stone for much of his sculpture from marble quarries in the mountains of Serravezza. Here, he supervised the quarrying of six 20-foot monolithic columns that became part of the facade of the Church of San Lorenzo.

Renaissance residence: The artist drew many of his assistants from Settignano, where this photo at right was taken, and neighboring towns in the foothills north of Florence. Pictured is a house in which a typical worker might have lived.



William E. Wallace



William E. Wallace

feels as though he knows them. "I'm very fond of them," he says. "They're wonderfully colorful personalities." He empathizes with Gianluigi Colalucci, chief restorer of the Sistine Chapel, who felt a sense of brotherhood with Michelangelo after spending 10 years on the scaffolding close to the master's work. (Michelangelo spent only four years on the scaffolding.)

Knowing more about Michelangelo's assistants and the details of their lives — why they were hired, how they were organized, what they were paid, what their duties were, how they worked together, and how they worked with Michelangelo — will make it possible to better understand how Michelangelo went about creating his larger projects.

"Michelangelo controls the work from the smallest detail to the most sublime," Wallace claims. "He is involved in the mechanical aspects of such tasks as obtaining material, paying workers, mining the quarries, hiring carters, and finding boats. He wants to supervise everything; he lives and breathes his commitment."

Why don't scholars emphasize these aspects of the work? Wallace says they would rather focus on artistic achievements than on drudgery. But, he says, "Behind every artistic masterpiece there are hours of tedious labor."

Wallace says this new information shouldn't detract from Michelangelo's myth. "It is a credit to Michelangelo's genius that he can effectively utilize the talents of assistants to create works of art that everywhere reveal his own stamp, both conceptually and stylistically," he says. "Michelangelo's achievements will be made more credible, without diminishing their magnificence in any way."

The myths portraying the genius working alone will persist, he believes, in the popular imagination, despite the book and despite any information to the contrary that comes forth. "I'm describing the more ordinary aspects of making art, but he is no less the genius because of them," Wallace says. "The myth of the lone genius is a fiction in the service of another truth: Michelangelo is the world's greatest artist for all time.

"How does Michelangelo go about creating a famous work like the Medici Chapel? How does he manage to lift marble into the air without breaking it?" Wallace stops himself, laughing: "You can't spend too much time talking about hoisting mechanisms. But even a hoisting mechanism can be interesting when it's part of the overall creation of an artistic masterpiece."

Wallace is not, of course, the first to dispel the Michelangelo myths. Others, including earlier conservators of the Sistine, have noted evidence of assistants' helping hands in the frescoed ceiling, and current Vatican conservators take for granted that the artist had help in painting the 13,000 square feet of surface on the vault and the lunettes.

The scholar is, however, the first person to present an overall picture of the men who worked with the artist on the Chapel ceiling, and his book will be the first to deal in depth with the many craftsmen who worked with Michelangelo throughout his career.

In 1987, with the Sistine Chapel restoration well under way, Wallace published an article in the scholarly journal, *Gazette des Beaux Arts*, called "Michelangelo's Assistants in the Sistine Chapel." "It seemed an opportune moment to give them their due," he says.

In the article, he describes the personalities and contributions of more than a dozen collaborators on the Sistine project — men like Piero Basso and Piero Roselli, who helped erect the scaffolding and prepare the vault for painting, and Michelangelo's old friend, Francesco Granacci, who recruited other Florentines to work on the project.

Will knowledge that the artist worked with assistants detract from Michelangelo's singular accomplishments in the Sistine and elsewhere?

Wallace thinks not. "On the contrary," he says, "when you look at the Sistine ceiling, you don't think of assistants, nor should you. The assistants simply helped to execute a project that was too large for one man; Michelangelo is the one who will be remembered — and rightly so."

Wallace believes that word about his book — which is anticipated with some

"You can reconstruct biographies of people who lived in 1500," says Wallace, who has gleaned information about Michelangelo's extensive collaboration with assistants from more than 1,600 letters to and from the artist.

“Michelangelo controls the work from the smallest detail to the most sublime. He lives and breathes his commitment.”

interest by Renaissance scholars — and the numerous articles he has written about Michelangelo are among the reasons he was in the select group invited by the Vatican to view the Sistine restoration last spring.

Among the eight Americans invited were John Shearman of Harvard; Creighton Gilbert of Yale; Henry Millon, dean of the Center for Advanced Study in the Visual Arts in Washington, D.C.; and Craig Hugh Smyth, former director of Villa I Tatti in Florence.

Wallace regrets, however, that the Vatican did not include in its invitation (which was sent to “those above the fray”) some of the more vocal critics of the Sistine restoration, among them Professor James Beck, chair of Columbia University’s Department of Art History and Archaeology, from whom he took a graduate seminar in art history. Beck has called the restoration “an artistic Chernobyl,” fearing, as a minority does, that the cleaning solution used by conservators may have “removed Michelangelo” along with 500 years’ worth of accumulated dust, rabbit glue, environmental pollution, and candle smoke.

Wallace believes the Sistine restoration

has been carried out “in a conservative and responsible way,” but he thinks the questions Beck raised about the project added a needed note of caution to the procedure.

While the restoration proceeded, Wallace climbed the Sistine scaffolding half a dozen times to view the ceiling up close; he was reassured by what he saw. “Anyone who has mounted the scaffolding can see that Michelangelo’s delicate shading is still there and that the figures are still three-dimensional and highly modeled,” he says, deflecting one of the most common criticisms. “The ceiling is truly stunning.”

Michael Kimmelman, chief art critic of the *New York Times*, agrees. In a recent article praising the general high quality of the restoration, Kimmelman seemed to dismiss the 10 years of widespread debate about the eventual outcome of the project. Wallace, however, has a feeling the world hasn’t heard the last word on the subject.

He will be following with interest the restoration of Michelangelo’s “Last Judgment,” which presents more problematic scientific and art-historical questions, such as the well-publicized dilemma of whether to remove the draperies that were added to cover Michelangelo’s nude figures. (Michelangelo was accused of indecency and sacrilege when the piece was completed, so other painters were hired to clothe the figures.) At first, Wallace was ambivalent about this action, but he now believes that the draperies have become part of the painting, and most should not be removed.

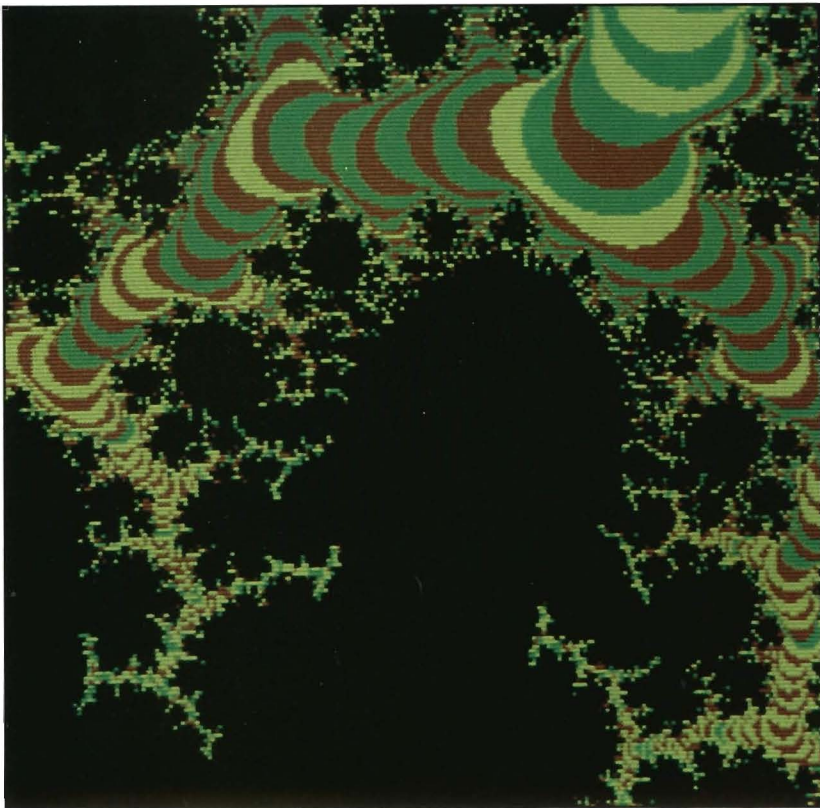
Already Wallace is contemplating another book — not a popular book, but a little less scholarly — about Michelangelo and his patrons. “The obvious patrons that come to mind are Julius II and the Medici,” he says, “but Michelangelo had an intricate network of family, political figures, professional associates, and friends. And, of course, he lived during the reign of 13 popes and worked for nine of them.”

Wallace acknowledges that destiny may have had a hand in determining his interest in Italian Renaissance art. He shares a birth date — July 30 — with Giorgio Vasari, friend and biographer of Michelangelo. “It seems particularly suitable,” he says. ■



William E. Wallace

Detail: From the tomb of Lorenzo de' Medici, Florentine statesman, ruler, and patron.



Just another pretty picture? A fractal form, a geometric shape that describes the structured irregularity of the natural world.

SIZING UP THE FRACTAL

The spectacular, computer-generated geometry of fractals has incited mathematicians to cross swords in a dispute over mathematical science.

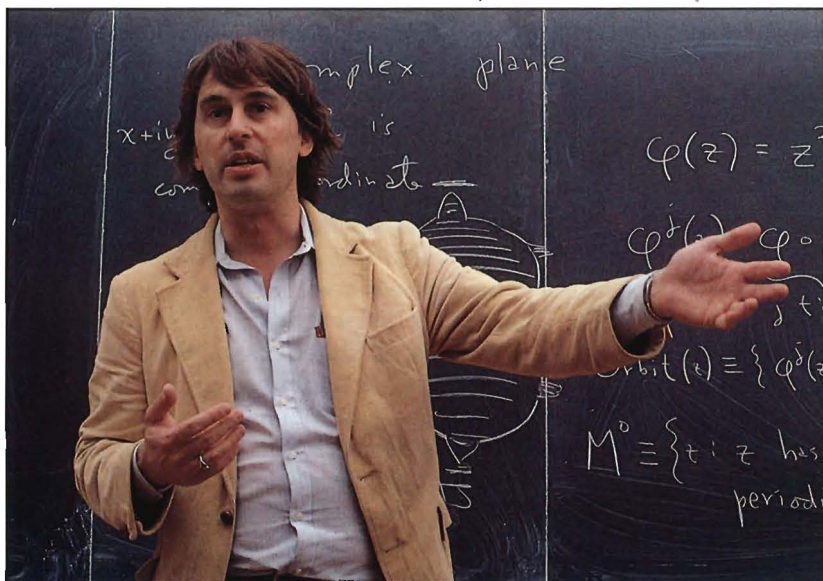
By Robert Pool

The mathematics community normally seems to be a genteel set of folks. They don't fuss over funding like physicists do about investing \$8 billion in a supercollider, they don't fight about whose results are correct like meteorologists do over global warming, and they don't file lawsuits over who stole whose virus. When a dispute does arise, it's usually settled with pieces of chalk at 20 paces. But a tiff that has smoldered for nearly a year now—including an article that was apparently too hot for one journal to handle—shows that beneath that quiet exterior, mathematicians are willing and able to slug it out with the best of them.

The subject of the fracas is fractals, those ubiquitous geometric objects that resemble clouds or trees or squashed bugs and contain patterns that repeat themselves at smaller and smaller scales. Partly because they make such pretty pictures and partly because they seem to pop up quite often in nature, fractals have become a hot topic both in the community and in the popular press. But some mathematicians are now saying that they're mostly hot air.

"This love affair with the fractal is disturbing to mathematicians like myself who see too many people believing that this stuff is serious mathematics," says Steven Krantz, professor of mathematics at Washington University. Krantz threw down the gauntlet last fall in an opinion piece published in *The Mathematical Intelligencer*, a journal read by most research mathematicians. "Fractal geometry," he wrote, "has not solved any problems. It is not even clear that it has created any new ones."

Even worse, Krantz charged, the intense publicity surrounding fractals has skewed perceptions of mathematics by policy makers and the public, and this hits mathematicians



Stephen G. Krantz

where it hurts: the pocketbook. “In some circles,” Krantz charged, “it is easier to obtain funding to buy hardware to generate pictures of fractals than to obtain funding to study algebraic geometry.”

Originally, Krantz had submitted his essay to the *Bulletin of the American Mathematical Society* as a review of two recently published books on fractals. It was accepted in January 1989, but Krantz had made the mistake of sending prepublication copies of the review to a number of researchers, including Benoit Mandelbrot, the man who named and popularized fractals in the early 1980s. Mandelbrot, who has positions at both IBM and Yale, is best known for the Mandelbrot set, an infinitely complicated figure that reveals more and more detail as it is looked at with greater and greater magnification. When he received his courtesy copy of the review from Krantz, he was not amused.

“I applied pressure to the editor to have a response by me included,” recalls Mandelbrot, who argued that the article was not a book review but an attack on fractals and on him in particular. But the book review

This article appeared in the July 27, 1990, issue of Science magazine, vol. 249, pp. 363-364. © American Association for the Advancement of Science.

editor, Edgar Lee Stout of the University of Washington in Seattle, told Mandelbrot it was the *Bulletin's* policy not to accept rebuttals of reviews. Instead, Stout asked Krantz to revise his article to tone down some of his statements, Krantz recalls. But after Krantz complied, Stout decided not to run even the diluted piece.

Krantz appealed Stout's decision to the Council of the American Mathematical Society, which declined to overrule the editor, so Krantz took his piece to *The Mathematical Intelligencer*. That magazine ran the milder version of the review along with Mandelbrot's rebuttal and prefaced them both with a narrative describing the *Bulletin's* wafflings.

Mandelbrot expresses irritation that the squabble ever made it into print. Mathematicians are always grouching about one thing or another in the privacy of the faculty lounge, he says, and that's where the fractal argument should have stayed. “It doesn't travel very well.” Nonetheless, he is perfectly willing to cross swords with Krantz in public if that's what it takes.

To Krantz's charge that fractals are little more than “pretty pictures,” Mandelbrot responds that studying fractals helps develop an intuition for certain mathematical problems that cannot be developed in any other way and that this insight leads to both new conjectures and new approaches to solving some profound mathematical theorems. His work and the work of other fractal geometers, Mandelbrot says, is in the tradition of geometrically minded mathematicians of the last century who drew pictures to gain insights. That approach stalled when the mathematics got too complicated for pencil and paper, but computers make it feasible once again.

But it's much more than looking at pictures, Mandelbrot says. “One picture is worthless. You make many pictures, you make many changes, you manipulate it like a real thing,” and eventually the insight comes. “Pretty pictures in the appropriate minds,” Mandelbrot says, “lead to pretty problems and entire new fields.”

The mathematics community is divided on the issue. Some mathematicians, such as Alec Norton at the University of Texas in

Austin, sympathize with Krantz's complaint. Norton says the emphasis on fractal patterns has misled students into thinking they can do mathematics merely by creating and looking at the computer-generated designs. Others, like Albert Marden at the University of Minnesota, defend Mandelbrot's approach, saying that "fractal-like situations come up all over science and mathematics."

Still others, such as Robert Devaney at Boston University, give the fight a split decision. Devaney, who works with high school teachers and students to develop new math curricula, says "high school kids love this stuff; they eat it up." Once they get interested in the pretty pictures, Devaney feels, it's easy to pull them into the mathematics behind the pictures.

And there is some real math there. Even Krantz acknowledges that some very important theorems are connected with fractals. But he is irritated by what he sees as a fascination with form over substance. "The fractal gurus spew data out on a computer, then see what they come up with. This is entirely counter to the scientific method, which in mathematics is called the proof."

One thing's for sure: Krantz's article and Mandelbrot's rebuttal have stimulated the mathematical community to debate the value of fractals. "Everywhere I went, people were

"In some circles," Krantz charged, "it is easier to obtain funding to buy hardware to generate pictures of fractals than to obtain funding to study algebraic geometry."

talking about the articles," says Sheldon Axler, editor of *The Intelligencer*.

Of the many mathematicians he has spoken to at conferences, Axler says a majority sided with Krantz, especially about the lack of mathematical content in fractal theory. "People are a little turned off by the hype. Where's the substance?" Researchers also agree with Krantz in their frustration over having to compete with fractals for funds, Axler says, and some mathematicians have even tried working a mention of fractals into their grant applications. "It seems that if fractals are dabbled into grants, it's easier to get the money," Axler says.

Some mathematicians who have followed the feud over fractals suggest that it is as much a cultural conflict as anything else. "It's not traditional mathematics," says William Thurston at Princeton, and so "a lot of mathematicians are suspicious of fractals." And although the turf battles in mathematics may seem obscure to the outside world, they are very real to mathematicians.

"Mathematics is the most ferocious field in science," Mandelbrot says, "because there is no objective judgement of the value of things." Arguments can get "very bitter," he adds, "but it just stays in the commons and the lounges because no one outside the field knows what they're talking about." ■

The *lingua franca* of Pure Mathematics

"One is reminded of the gentleman who discovered at an advanced age that all his life he had been speaking prose," says Professor Steven Krantz of those individuals who do not appreciate the pervasive nature of mathematics. "For a long time now, the technical world has been speaking mathematics, but only recently has it become conscious of its *lingua franca*."

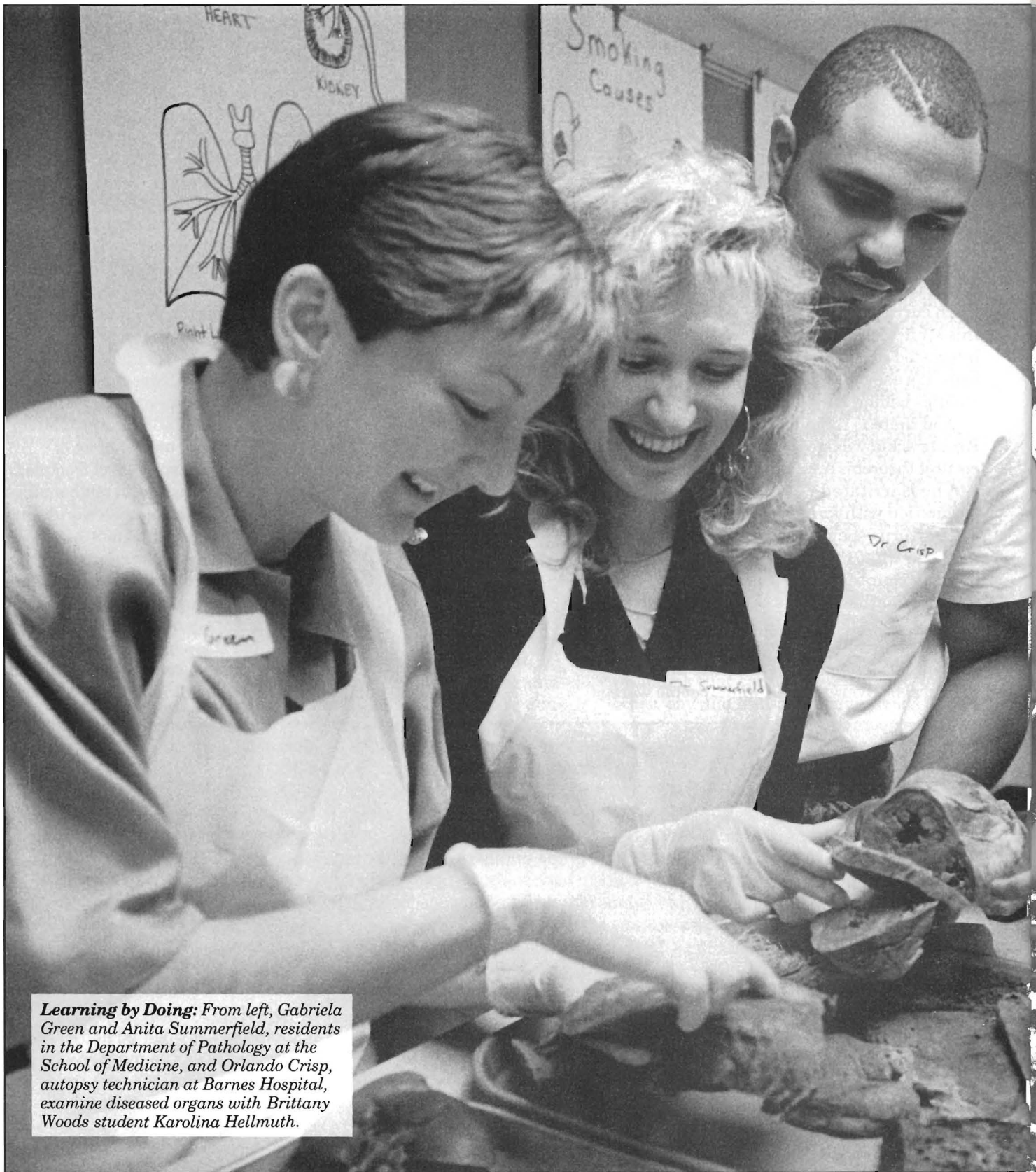
Krantz cites a litany of products produced by the new breed of so-called pure mathematicians, theoreticians motivated by questions about mathematics itself as opposed to

questions regarding the physical or real world. The list includes the carburetion system and body of the Volvo, the creation of the fuel-efficient wing on the Boeing 767, the use of prime numbers and mathematical logic to create new generations of unbreakable codes, and the use of the fast Fourier transform in the resolution of photographs from space vehicles.

"The popular press enjoys pointing out that mathematicians invented the computer," says Krantz, "yet traditionally, this group of scientists has been among the least interested in using computing muscle. Why? Only recently have computers become sufficiently powerful to be

of any use or interest to a mathematician.

"Formerly, following the model of Einstein, we engaged in 'thought experiments.' Now, with a computer, we can experiment with sophisticated models, involving billions of calculations, that can guide our investigations." Nevertheless, Krantz cautions, "the computer cannot think. It cannot supplant the analytical reasoning of a human being. While the best science students are as talented and hard-working as ever, the number who are in a malaise — who are unmotivated, unprepared, or uncomfortable with analytical thinking — grows ever larger."



Learning by Doing: From left, Gabriela Green and Anita Summerfield, residents in the Department of Pathology at the School of Medicine, and Orlando Crisp, autopsy technician at Barnes Hospital, examine diseased organs with Brittany Woods student Karolina Hellmuth.

Lab Partners

The University joins
neighboring schools
in promoting science
education

by Joan Bray

Tommie Pillers, who teaches science to seventh graders, wanted her students to study animals firsthand. She acquired a few guinea pigs and rabbits but lacked materials for providing them proper habitats.

Ed Murray, Pillers' colleague, dreamed of his students planting a prairie on a half-acre of land next to their school. A \$510 grant from the Missouri Prairie Foundation bought the seeds. But then Murray had to figure out where the plants could get a healthy start.

Biology teacher Judy Crouch wanted her Advanced Placement classes to study the giant chromosomes in the salivary glands of fruit flies. She didn't have the materials, however, to remove and stain the glands nor anyone to assist her in the laboratory.

Joan Bray frequently writes about education and women's issues. She resides in St. Louis.



Herb Weitman

All three teachers—employees of University City’s school system in St. Louis—were faced with the consequences of the familiar but hard fact of funding for public education: tight budgets often deprive elementary and high school teachers of the resources to present their students with the most up-to-date, relevant, and exciting learning experiences. The squeeze is felt acutely in science, where bean plants, frogs, and microscopes help translate the concepts described on the pages of a book into the reality of hands-on discovery.

But in these three instances, neither the teachers nor the students had to feel short-changed. Under the Science Partnership, a special relationship between Washington University and the University City schools, the teachers turned to faculty and staff members of the University’s science departments for assistance. The University community responded with advice, materials, equipment, and time.

“When a teacher wants to explain how there can be no such thing as teenage mutant ninja turtles and to show in various ways how real mutations work in nature, he or she may contact the University to obtain assistance,” says biology professor Sarah Elgin, who initiated the program. Elgin’s two sons attend University City schools. She began organizing the partnership when, as a parent, she became aware of the resources teachers lacked.

Elgin had talked with a fellow cell biologist, Bruce Alberts, chairman of the department of biochemistry and biophysics at the University of California at San Francisco, about a cooperative venture he was starting with San Francisco’s public school science teachers in 1987.

When Elgin was invited to give a seminar at UCSF, she told Alberts that she wanted to learn about the partnership program while she was there. He arranged for her to meet with key people involved.

“The program appealed to me in terms of efficiency for getting teachers what they need,” Elgin says. By last spring [1990], she notes, 150 teachers and 200 university scientists were participating in UCSF’s program.

Back home, she was more convinced than ever that the plan was worth a try.

“Our science teachers are really strapped,” Elgin says. “We need another Sputnik.”

In 1957 the Soviet Union shot ahead of the United States in space exploration when it put a satellite — Sputnik — into orbit around the earth. That feat ignited a race for achievements in space that was felt all the way into elementary schools. The U.S. government spent billions of dollars developing not only technology, but also curricula that generated interest in science among students for at least two decades.

Murray, who has taught science in University City for 22 years, remembers the skyrocketing infusion of federal money into schools in the late 1960s and early 1970s. Then, one science teacher’s materials budget might have been as much as \$10,000 a year, he says. “Since that time, the money has



Herb Weisman

Getting a charge: Kenneth Kelton, seated, associate professor of physics, demonstrates the properties of electromagnetism at a science field day at Brittany Woods Middle School.

decreased every year until we're down to very little. Meanwhile, materials have tripled in price. We're having to look for outside sources."

The well-equipped classrooms, teacher aides, materials budgets of the space-race era — "all these things have eroded," Elgin says. "A teacher's materials budget now is often as low as \$1 to \$3 per pupil per year. Without resources, science becomes very much a book subject. That means *death* for students' interest."

And therein lies another reason for promoting cooperation between the University and the school district. As resources have dwindled and the quality of science programs diminished, student interest in science has waned.

According to Bassam Z. Shakhashiri, writing this year in *American Society for Microbiology News*, the number of college freshmen who expected to earn bachelor's degrees in engineering, natural sciences, and computer sciences grew steadily from about 90,000 in 1959 to about 220,000 in 1985. Since then, the number has declined steadily.

Shakhashiri, a chemistry professor who formerly headed the National Science Foundation Directorate for Science and Engineering Education, points out: "Freshmen who declare their intentions to be science, engineering, math or pre-med majors frequently change their minds and switch to another field. . . . By contrast, people who declare their intentions to major in business or journalism seldom switch later to science."

He documents a similar downward trend in the number of doctorates awarded in science and predicts major shortfalls in the number of doctorate- and bachelor's-level scientists by the early 21st century.

Shakhashiri believes that the situation is even more critical than it was in the post-Sputnik era. He identifies three main reasons:

- The population of the United States in the interim has increased by about 50 million. This means that we have more students to teach, so we need many more qualified teachers.
- In a highly competitive global economy (which did not exist in the 1950s) we need

a good supply of scientists and engineers coming through the educational systems.

- We live in a much more scientifically and technologically advanced society. We need a citizenry that can behave rationally on the basis of the information available to it.

Elgin notes that when deans of medical schools worry about qualified students applying, they look to the university or college for their preparation. University professors look to the high school, she notes, high school teachers to the middle school, and logically, middle school teachers to the elementary school.

The development of the partnership for the middle school and high school is particularly timely, Elgin says, because University City is upgrading its science program at the elementary schools. With a \$600,000 grant from the National Science Foundation, the district is helping teachers use hands-on curricula in their classes. A \$60,000 grant for the 1990-91 school year enables the district to hire two aides and to organize science equipment and experiments for the elementary classrooms. And in a pilot program at Delmar-Harvard Elementary, science classes are taking place in a specially designed laboratory.

Elgin hopes that the partnership will help extend the positive experiences students are beginning to have in elementary science classes through their middle school and high school years. "With the partnership, we're trying to create teacher access to expertise and resources so students can stay excited about science," Elgin says.

Two years ago, Elgin began looking for colleagues willing to work with the public school teachers. Professor Joseph Ackerman, chair of the chemistry department, came forward to address what he calls "the desperate shape of the American educational system, particularly the undervalued elementary and high school teachers and programs. We've all screamed about it," says Ackerman, who in the 10 years he's served on Washington's faculty has observed a steady decline in students' fundamental skills at the entry

Tight budgets often deprive elementary and high school teachers of the resources to present their students with the most up-to-date, relevant, and exciting learning experiences. The squeeze is felt acutely in science.

The students learned the consequences of smoking, hypertension, and alcohol as they slipped on surgical gloves and examined the organs for themselves.

level. "The partnership gives us a chance to take action."

The University City system seemed the ideal place to start because "it's the University's next-door neighbor and it's a small district [5,000 students], which makes the partnership manageable," Elgin explains. Also, many of the University faculty and staff, like Elgin, live in University City and have a personal interest in the schools.

"It's a diverse district so we get to interact with a whole range of students," Elgin says. She notes that the demographics of the students — 80 percent African-American, 19 percent white, one percent Hispanic — give the University scientists the opportunity to build on one of the major goals of the school district's NSF grant: encouraging interest in science among minorities and females.

The first informal discussions between University scientists and University City teachers ascertained a high level of interest in a cooperative program, recalls Elgin. The resulting partnership was officially launched with a meeting of teachers and University volunteers.

By spring 1990, 22 University scientists were serving as partners to individual teachers or groups of teachers. Paul Schlesinger, a cell biologist and assistant professor at the medical school, is one of the original University volunteers. For two years he has been working with teachers and students at the Ronald E. McNair Sixth Grade Center. The first year the older of his two daughters was a student there.

Schlesinger introduces the students to genetics experiments involving fruit flies and pea plants. "It's amazing how fascinated the kids get," he says. "They're more active, more challenged, more aware. The teachers can demonstrate in the labs and deal with very current topics, not just those they studied in college. Everyone is learning something useful."

Lee Sobotka, assistant professor of chemistry who has lectured in high school classes and served as a partner to middle school teachers, believes that the partnership can be most effective when it builds on interest that begins developing at a young age. "If you want to get people interested

in science, you've got to go way back in years," he says. "If you're successful in the lower grades, this sort of project can work very well in the middle school and high school."

Pat Gibbons, professor of physics whose four children have attended University City schools (one recently graduated), has been participating in science activities in their classrooms since 1978. He says he welcomes the partnership's formalizing the University's relationship with teachers. "If a teacher wants to make a cold phone call and ask for help, the people are there to pass along the request. That wouldn't work under a more informal arrangement."

According to Gibbons, the most efficient use of the University scientists' time occurred last spring when the partnership organized a science field day at Brittany Woods. More than 20 professors, staff members, and graduate students joined the middle school teachers to offer a smorgasbord of experiments, demonstrations, and activities for the students.

Manipulating prisms, lights, mirrors, laser beams, and even a slinky, Gibbons and graduate student Mark Kaufmann showed students the principles of optics in action.

In a windowless basement room, Jacqueline Hoffman, lecturer and lab course coordinator in biology, discussed how photo bacteria make some fish look like they come equipped with headlights or make ocean waves appear phosphorescent at night.

She then turned out the lights to present the full effect of the bacteria in salt water. A chorus of "a-a-ahs" grew as the contents of test tubes, petri dishes, and a meter-long rod turned day-glo green.

Anita Summerfield and Gabriela Green, residents in the Department of Pathology at the School of Medicine, held the students' attention as the two displayed diseased organs — hearts, kidneys, lungs, livers, and tracheas. The students then learned the consequences of smoking, hypertension, and alcohol as they slipped on surgical gloves and examined the organs for themselves.

"What's that black thing?" "That had too



Joe Angeles

Sarah Elgin

much *what?* “Why does this smell?” the students queried as they crowded around the table. And as they studied the organs further: “Does the air go through here? Where does the blood go from there?”

Science teacher Murray agrees with Gibbons that the field day was particularly successful. “We got a lot of positive activity going,” he says. “The students learned a lot.”

Testimony to Murray’s claims came from Thomas Lewis, an eighth grader, after he attended the optics demonstration. “Being an avid reader of science fiction, I find the laser interesting,” Lewis said. “In science class we didn’t do as much on optics. I’d do more if I had the opportunity.”

A seventh grader, Karolina Hellmuth, was fascinated by the human organs. “It’s sort of gross, but it’s interesting to see what cholesterol is, to see what smoking does to your lungs,” she said. “I like seeing this stuff hands-on. It’s not interesting in a book.”

Like Elgin said. And that’s why she’s working with the school district and the University to strengthen the partnership.

To get the program off the ground Elgin secured \$5,000 from Chancellor William Danforth’s office. This year, Provost Edward Macias is contributing funds to the program and has added a half-time coordinator—Hoffman, with the luminescent bacteria—to work with all the University’s science outreach programs.

One such program is the three-week lecture and laboratory workshop in molecular biology for high school teachers offered at the University last summer. Elgin, Hoffman, and Thomas Keller, biotechnology course coordinator, taught classes in conjunction with the Mathematics and Science Education Center in St. Louis, a not-for-profit group that works with teachers.

Hoffman says of the coordinating job, “I’ll be looking for financial support, writing for grants. I’ll also be recruiting people. Twisting arms is another part of the job.” She also plans several meetings among participants in the partnership and a visit to Alberts’ program in San Francisco to gather ideas.

Elgin says, “We hope the partnership will acquire enough experience to learn what the teachers really need.” And with Hoffman as coordinator, she says, “We can arrive at a point where we’ll use Washington faculty time to the greatest advantage. We haven’t really begun to tap our resources.” She notes that in one quick survey, 50 out of 200 graduate students agreed to serve as teaching assistants for experiments in high school classes.

“The teachers are experts in education,” Elgin says. “Most of us are not curriculum people, but we are scientists who can perform a crucial community service. One of the biggest barriers to success is the inability to incorporate experimental work into the science curriculum. The University can’t make up budgetary shortfalls, but it can help to show the schools how to get the most science for the money.”

“Given the kinds of financial problems our schools have, keeping up with the scientific advances will be difficult for them,” adds Schlesinger. “That’s why I’m willing to put so much time into the partnership.” ■

“We haven’t really begun to tap our resources,” claims biology professor Sarah Elgin, who noted in one quick survey that 50 out of 200 graduate students agreed to participate in the partnership.

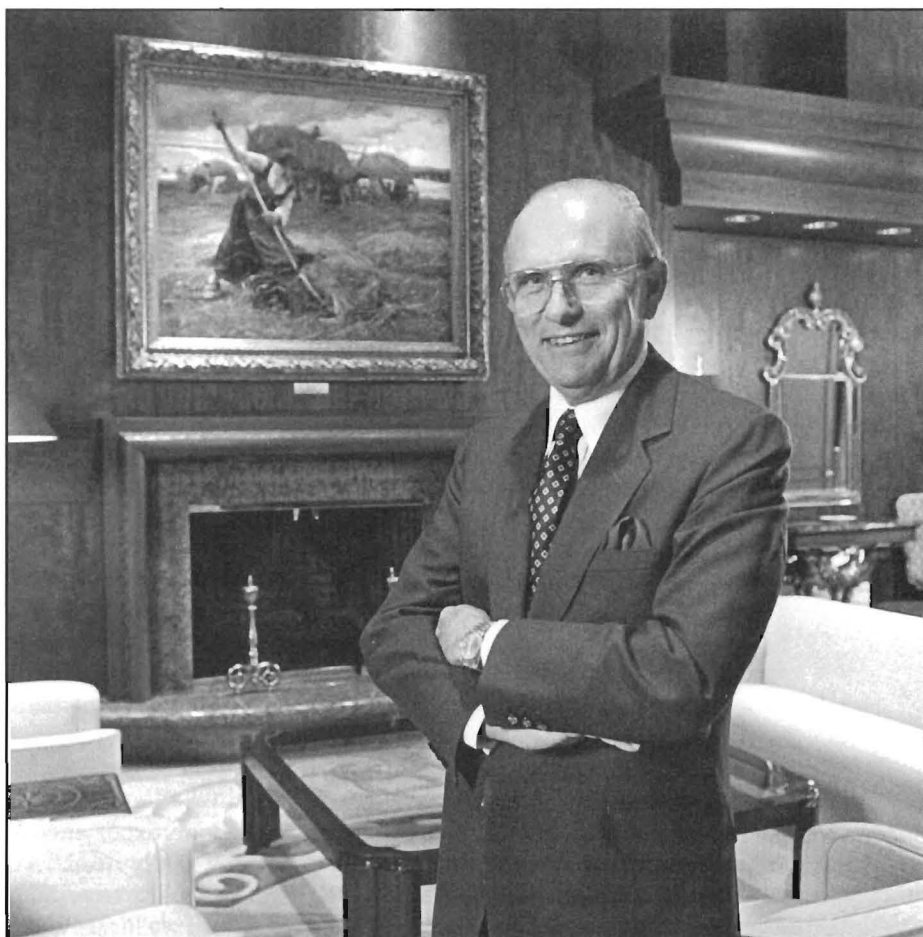
Making Good Time with Earle H. Harbison, Jr.

When Earle H. Harbison, Jr., A.B.'48, completed his undergraduate degree in just three years by going to school year-round, he proved that he didn't believe in wasting time. He ascended rapidly through the ranks of consecutive careers of government service and private industry, and he became president and chief operating officer of Monsanto after just 19 years with the company. His reputation today is that of a corporate leader who faces change courageously, tackles challenges head-on, and encourages subordinates to do their best.

Just 16 years old when he graduated from high school in St. Louis, Earle won a partial scholarship to Washington University, where he received his A.B. in political science with a minor in English at age 19. He subsequently enrolled in the Washington University School of Law. A spring-break trip to Washington, D.C., however, changed his plans. While visiting a cousin who was a high-ranking official in the U.S. Department of Agriculture, he met the personnel director of the Central Intelligence Agency (CIA) and was promptly recruited.

In October 1949, Earle dropped out of law school and headed for Washington, D.C., to begin a career in the CIA's overt operations. (Eventually, he did finish law school at George Washington University and attended the Program in Management Development at Harvard University.)

In 1952, Earle returned to St. Louis for a visit. At a party arranged by a friend, he renewed his acquaintance with Suzanne Siegel, B.S.B.A.'49, whom he had dated while in school. Two months later they were married in St. Louis. They set up housekeeping in Arlington, Virginia,



Joe Angeles

Earle H. Harbison, Jr.

where they became active in Washington University's Washington, D.C., Alumni Club. Sons Earle Douglas and Keith Siegel were born, respectively, in 1954 and 1957.

In 18 years with the CIA, Earle reached super-grade status, attained by few federal employees. He also received the William A. Jump Memorial Award, an honor given annually to one federal civil servant under the age of 36 for exemplary administrative contributions.

By 1967 the Harbisons were ready for a new challenge, so Earle began seeking a career back in the Midwest. Corporations found his government experience and credentials interesting, but weren't sure how he would fit in. He turned down one

solid offer because he had a chance — albeit a slim one, he felt — to go with Monsanto, a company then not known for hiring executives from the outside. After impressing company officers with his energy, ability, and flexibility, he was hired with no clearly defined job. A few weeks later, Charles H. Sommer, then president of Monsanto, called Earle in and asked him to take over the company's worldwide computer operation. Harbison became director of management information systems, a major department with 800 employees, in September 1967. His second career, at Monsanto Company, was launched.

When John W. Hanley, former Washington University trustee, arrived at Monsanto as chairman and

CEO in 1972, he took inventory of the company's key people. He kept a list of "up-and-comers," which soon included Earle's name. Hanley recognized three qualities in Earle: he was personable, smart, and able to think in nontraditional ways. Hanley soon gave Earle responsibility for Monsanto's management training program and later moved him into a top planning role. This led to Earle's being named vice president of Monsanto Commercial Products Company, his first opportunity to manage a line organization.

In 1979, he became group vice president and managing director of Monsanto Industrial Chemicals Company. He was subsequently promoted to executive vice president in 1981; corporate executive vice president and chairman of Fisher Controls International, Inc., in 1985; and vice chairman of the Monsanto board and board chairman of both G.D. Searle and the NutraSweet Company early in 1986. Later that year, he was named president and chief operating officer, overseeing the company's worldwide operations.

Most of Earle Harbison's time belongs to Monsanto: he works 10 to 12 hours a day, and sometimes on the weekend as well. But Earle also finds ways to make significant commitments of time and energy to the community, and especially to Washington University. He is particularly proud of the strong working relationship that exists between the scientists at Monsanto and those at the University — a model for industry-university cooperation. Before he became president of Monsanto, for several years he represented alumni employed there as the University's Corporate Matching Gift Program representative.

Earle and Suzanne are Patrons of the William Greenleaf Eliot Society. He has served on its Mem-

bership Committee and is now in his second year as the society's president, a pivotal role in the University's volunteer structure. He is also an active member of the National Council for the Faculty of Arts and Sciences. "I am a believer that you give something back," he says. "I only wish I had more time. Fortunately, the Eliot Society doesn't depend on just one person — it has had good staff and great presidents, officers, and volunteers." Those who

◆

"My years here
were very formative,
giving me the
broad-scale
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allows me to enjoy
many things in life."

◆

work with Earle, however, will attest that he gives only quality time.

Business dean Robert L. Virgil, who frequently invites Earle to guest lecture in classes at the John M. Olin School of Business, views him as "a person of the highest integrity, an outstanding model of the senior executive for our students." Says Earle, "I feel a great affection and affinity for the University. If you look at education today, not just in the successes, but in the warp and woof of life, we got an uncommonly good education at Washington University. The institution has been very important in the lives of many people. My years here were very formative, giving me the broad-scale background that allows me to enjoy many things in life.

Most importantly, I found my wonderful wife of 38 years and great friends whose companionship is so important to us — all at Washington University."

Earle believes that those in his generation who share his strong feelings have a responsibility to demonstrate them to younger alumni around the world as the University advances in national and international stature. He also believes that other countries should help support the University because it has helped educate their scientists, business and technology leaders, physicians, teachers, and other key members of their societies. He put his belief to work by helping the University secure a major grant from Japan's Mitsubishi Kasei Corporation.

Despite the demands of his career and the time he's given to the University, Earle Harbison has even more to share. Currently, he's a board member of United Way of America, United Way International, and chairman of the Challenge Division for United Way of Greater St. Louis. He's vice chairman of the St. Louis Regional Commerce & Growth Association; a board member and vice chairman of the Municipal Theatre Association; a board member of the St. Louis Art Museum; and a director of Barnes Hospital and the St. Louis VP Fair Foundation. He's a director of several corporations as well, a member of national committees on investment negotiations policy and product liability, an advisory director of the British-American Chamber of Commerce, a director of the U.S.-Japan Business Council, and a member of the U.S.-Korea Business Council.

Education, family, two careers, community service — Earle Harbison has found time for it all. ■

VIEWPOINT

History Reveals Arab Unity a Myth, at Best

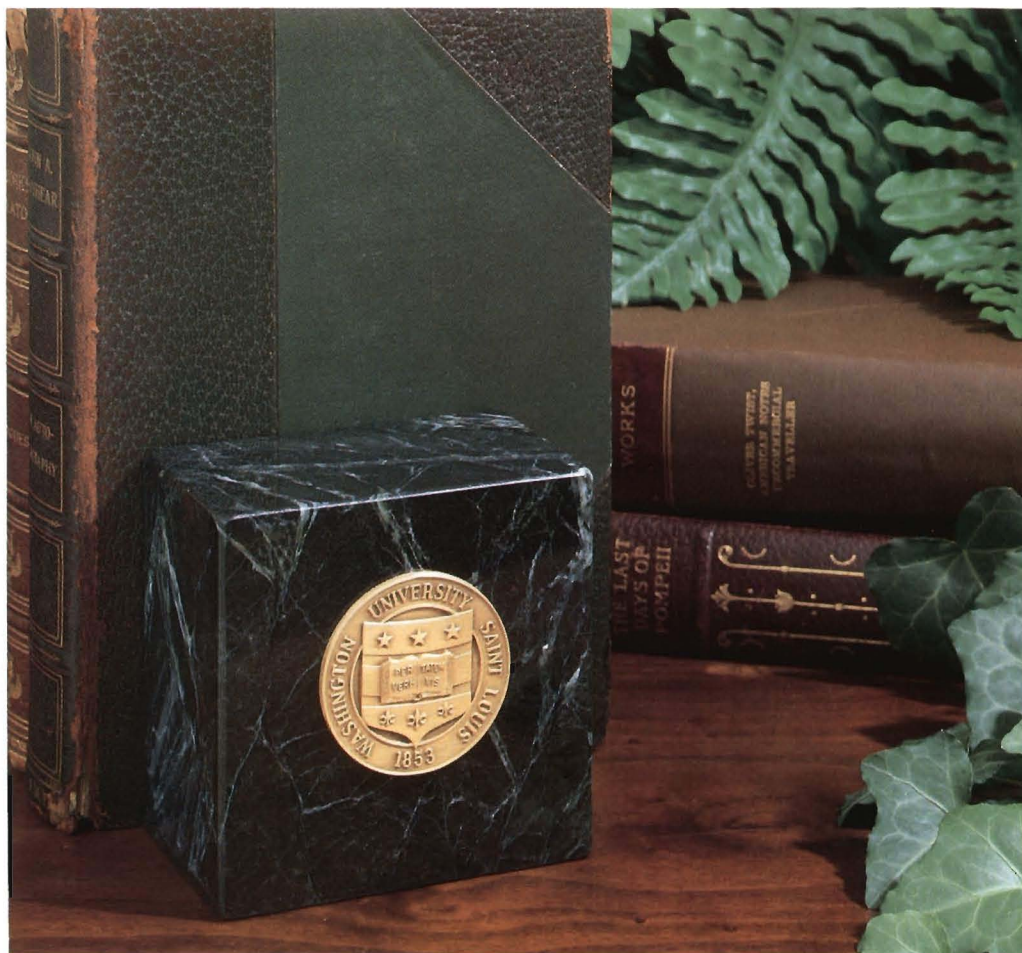
The Arab League's 12-10 vote condemning Iraq's takeover of Kuwait in August is said to have "shattered forever" the unity of the Arab world and "drastically realigned" the Arab states along a different set of political polarities. Nonsense. Since the League was formed in 1945 — at the urging of Britain's then Foreign Minister Anthony Eden — the Arab states have been united on only one thing: the continuing conflict with Israel, and that only until 1979, when Egypt and Israel signed their peace treaty. The Arab world has been in a more or less constant state of angry realignment triggered by inter-Arab conflicts, most of which have had little or nothing to do with the 42-year Arab-Israeli war. A

bit of history makes the point.

Even Iraq's invasion and annexation of Kuwait was not a unique event in the post-World War II Arab world. In 1962, after a group of radical officers overthrew Yemen's king, Imam Mohammed al-Badr, Egypt sent an expeditionary force to Yemen, allegedly at the request of the new military rulers. It's still not clear if the coup was instigated by the Egyptians, but there's little doubt that Egypt's ruler, Col. Nasser, had annexation in mind when he intervened. In the subsequent bloody civil war, Egypt bombed Saudi towns, and the British and the United States were drawn in on the side of the royalists; five years later, under intense international pressure, the Egyptians finally withdrew. One consequence of the war was the creation, in 1967, of the

People's Republic of South Yemen; the two Yemens were reunited in June 1990.

Nor was the Egyptian intervention in Yemen the only other inter-Arab conflict in which the parties resorted to arms. Since 1963 Algeria and Morocco have waged a sporadic, low-level shooting war against one another, at first directly in the desert over the mineral deposits near Hassi Beida and Tinjaub, in the Tindouf area, more recently indirectly through the conflict over the Western Sahara and its enormous phosphate deposits. From 1969, when Col. Qaddafi overthrew the Libyan monarchy, until today, he has been in open and continuous conflict with at least one or more of his neighbors: aside from attempts to subvert and/or overthrow every one of the governments next door, he seized (1973)



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a segment of northern Chad, the Aouzou Strip, and has been militarily involved in its civil war; in July 1977, he sent his tanks to engage Egyptian armor in an inconclusive battle across his eastern frontier; and in 1980, he sent a commando force to seize the western Tunisian town of Gafsa.

The Syrians and Iraqis, during the years when they haven't been fighting the Israelis, have feuded with each other over the use of the waters of the Euphrates, and every so often, engaged each other in brief but vicious border clashes. The Syrians entered Lebanon in force in 1976 under the fig leaf of an Arab League peacekeeping force; they're still in Lebanon, long after their peacekeeping mandate ended, still pursuing old territorial claims in south and south-central Lebanon. In 1971, during latter months of the Palestinian-Jordanian crisis, the Syrians sent a tank column (dressed up in Palestinian colors) into Jordan. A Jordanian armored riposte, aided by the British and an Israeli threat to intervene, forced the Syrians to retreat. Earlier that year, when Syrian and guerilla forces held much of northern Jordan, Nasser dispatched three battalions of the Egypt-based Palestinian Liberation Army (under Egyptian command) to help fight the Jordanian army.

The Iraqis, in addition to feuding with Syria, have twice before demonstrated their intent to take over Kuwait by force. In 1961, when Kuwait became independent, Iraq massed troops along its frontier, and it was only the rapid deployment of British and Arab League troops in Kuwait that prevented an invasion. In 1963, Iraq recognized Kuwait, but 10 years later, in March 1973, Iraq occupied a Kuwaiti border outpost and seemed ready to start an invasion; here they were again dissuaded, and again withdrew, but



Kevin Pope

this time with great reluctance.

These incidents chronicle only inter-Arab *military* conflicts; political conflict, some of it predating the birth of Israel, has been even more frequent than military confrontation. The Arab world lives with a glaring and understandably frustrating paradox: on the one hand, all espouse the pan-Arab vision of a united, brotherly community striving for the good of all Arabs; on the other, the bitter reality of virtually constant inter-Arab conflict, be it in the form of feuds between leaders, territorial disputes, ideological differences, competing visions of state-Islamic relations, or conflict over the natural resources so unevenly (and seemingly unfairly) distributed over the region. Not even Arab cooperation in the Arab-Israeli conflict, which gave the Arab world

what little cohesion it has had, could mask underlying differences about strategy, tactics, and goals in the struggle.

It's not difficult to recognize for what it is the Arabs' visible unhappiness and embarrassment over Iraq's actions, or to understand why almost half the Arab states failed to join the majority's condemnation of the invasion and annexation of Kuwait. Arab unity was never more than a myth at best, and the Arab states are no more virtuous than other states of the world, the pan-Arab vision notwithstanding.

— Victor T. LeVine ■

Victor T. LeVine, professor of political science at Washington University, specializes in Middle East and African affairs.

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To Order: Call Toll Free: 1-800-835-2246 operator 114
Questions? Call Factory at (203) 232-1017
Remit Orders to: With Distinction, 104 Park Road,
West Hartford, CT 06119.
Please allow 2 to 3 weeks for deliveries.

PAYMENT & SHIPPING

Check or Money order enclosed
(make payable to With Distinction)

Mastercard
Visa

Account # _____

Exp. Date _____

Signature _____

SHIP TO:

Name _____

Address _____

City _____

State _____

Zip _____

Phone _____