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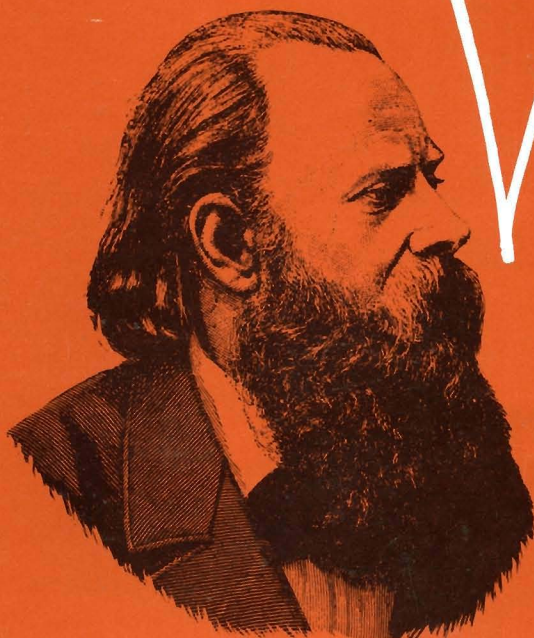
Magazine

*You use the
simple equality
for
simple functions.*

$$f^*(t) = \sum_{k=1}^n f_k^*(t), \quad \text{for } t > 0,$$

*And you claim
that it follows
simply that*

$$\begin{aligned} \|f\| &\leq \sum_{k=1}^n \|f_k\| = \sum_{k=1}^n b_k \|X_{F_k}\| \\ &\leq \sum_{k=1}^n b_k \{\mu(F_k)\}^{1/p} = \sum_{k=1}^n \frac{1}{p} \int_0^\infty t^{1/p} f_k^*(t) \frac{dt}{t} \\ &= \frac{1}{p} \int_0^\infty t^{1/p} \sum_{k=1}^n f_k^*(t) \frac{dt}{t} ? \end{aligned}$$



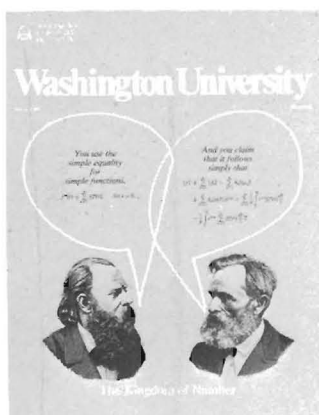
The Kingdom of Number

Olin Library is one of the few academic libraries in the country open more than 100 hours a week. Its lights beam across a darkened campus every weeknight until midnight and its doors are open every day. It is a campus center not only for research, but also for study. Twice a year, during reading week and exams, these long hours are extended by at least ninety minutes a day. During last December's twelve-day reading and exam period, more than 37,000 persons clicked through its entry turnstile.



Washington University Magazine

Fellowships for Women	2	The University's successful Olin Fellowships
Olin Fellows	7	Thumbnail sketches of three fellowship holders
Ragtime	10	We're just wild about Eubie
Kultermann	12	Critic of contemporary and historical arts
The Kingdom of Number	18	WU's vital department of mathematics
Having a Ball	24	Revivals
Modern Religion: Diversity, Freedom, and Wholeness	28	Protestant theologian Martin Marty's view
The Federal Reserve and Inflation	32	What the Fed's up to
ELB	34	Following the trail of Edward Lindley Bowles



Mathematics: The language of experimental dialogue. See page 18.

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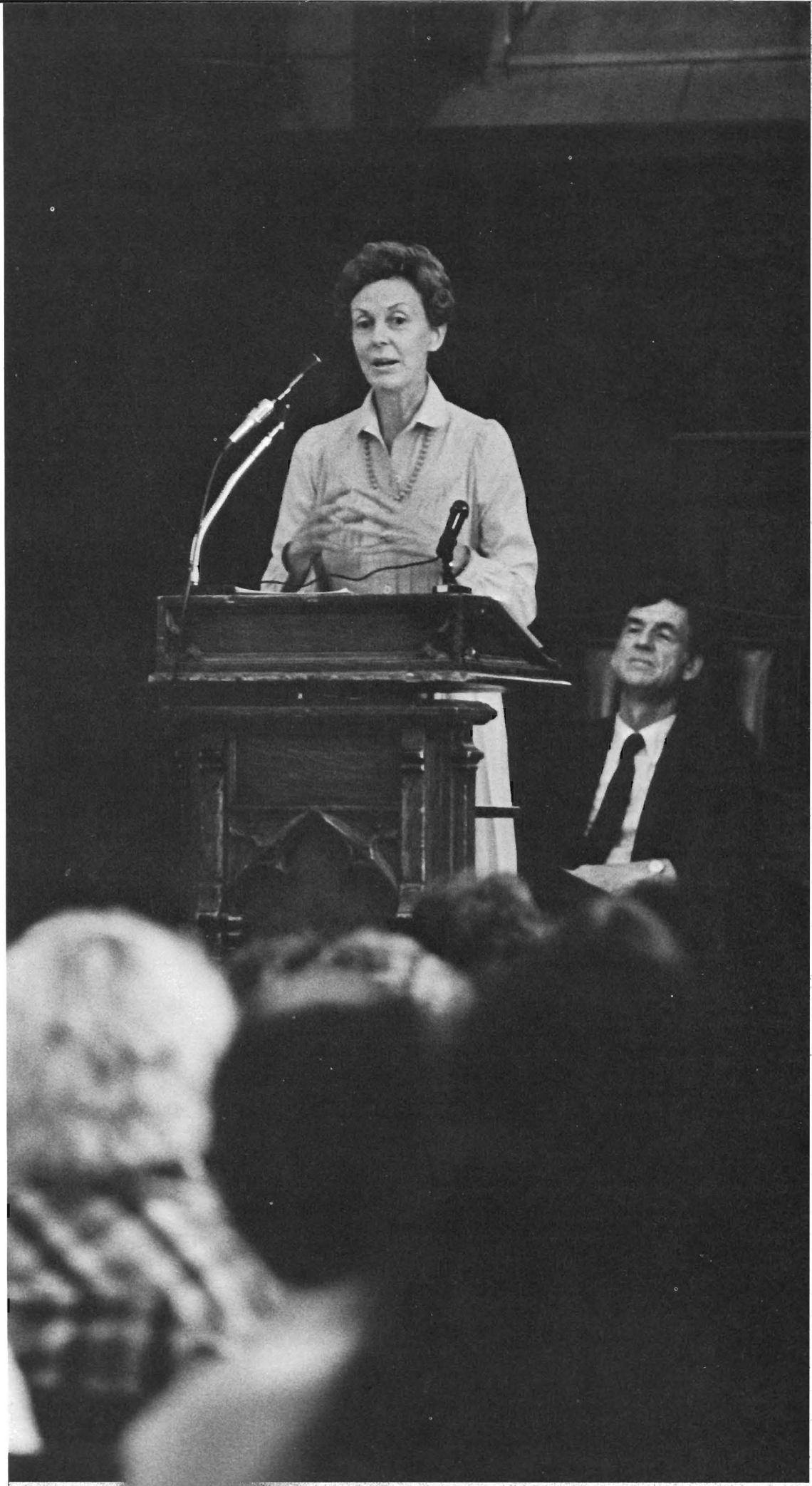
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Jill Ker Conway, president of Smith College, was keynote speaker of the 1979 Mr. and Mrs. Spencer T. Olin Conference on Women.



Fellowships For Women

By Dorothea Wolfgram

IN RECENT YEARS the American system of higher education has been under considerable fire for its failure to increase significantly the number of women in its own ranks and in male-dominated professions such as law, medicine, architecture, engineering, and the sciences. Criticism has come not only from feminists, but also from the more staid voices of historians, social commentators, and government officials.

In response, American universities and foundations have targeted certain programs and graduate support specifically for women. Despite such efforts, the problem and the criticism have persisted. Some educational historians contend that women's access to professional education is not enough, noting that more than a century of coeducation has not peopled this country's professions, nor its business world, with any meaningful percentage of women.

One such fierce historian/critic is Jill Ker Conway, president of Smith College, who was keynote speaker last fall at Washington University's Olin Conference on Women. And yet, on that occasion, Conway called the Mr. and Mrs. Spencer T. Olin Fellowships for Women and the conference which bears their names "one of the most fruitful and sensitive approaches to the professional education of women currently existing in this country."

What won her praise was a program which provides a substantial number of women financial support for graduate study preparatory to academic or professional life and which, through

the conferences, underscores their perceptions of themselves as intelligent beings able to succeed in occupations traditionally male-dominated.

The Olin fellowships program, now in its sixth year, is a joint undertaking of Monticello College Foundation and Washington University. Its purposes are to encourage women of exceptional promise to prepare for careers in higher education and the professions, to continue and extend the historically important contributions of Monticello to the education of women, and to extend the influence of Washington University by assisting in the advanced education of outstanding women who are likely to make significant contributions in their chosen fields.

IN HER OLIN conference address and her writings, Conway has stressed that women's entry into service professions such as education, social welfare, and health care did not enhance "women's awareness of their own value as intellectuals." Rather, she says, it inhibited that awareness because women pined out for themselves a "respectable bourgeois professional role," one that was in keeping with "women's role" as the nurturer and educator.

In 1974 she wrote in the *History of Education Quarterly*, "Contrary to what educational historians have had to say up to now, it is not access to educational facilities which is the significant variable in the tracing of the 'liberation' of women's minds. What really matters is whether women's consciousness

of themselves as intellectuals is altered. This did not take place as the result of the development of coeducation in the United States. It did not occur when women entered the service professions."

She further stresses that "the educational experience of women ought to provide them with some sense of collective life," so that female sociability parallels the male sociability which "has been carefully institutionalized in all communities devoted to higher learning."

It is these essential, intangible ingredients added to its financial support that make the Olin Fellowship Program original. The number of Olin fellowships offered by Washington University in the past five years (42) is not of primary import, although it is impressive. What energizes the program and gives it precedence is the conscious effort toward community fostered by the University, the fellows themselves, and, in no little measure, by the Monticello College Foundation.

In one sense, the Olin conference focuses this activity. Fellows have always taken part in its planning and execution; last fall, for the first time, they were among those who presented papers. That first step is applauded by all.

The Olin fellowships trace their inspiration to a snowy night in early 1974, when Washington University Chancellor William Danforth and his wife, Ibbey, braved threatening weather to keep a dinner engagement with Robert and Gladys Levis and Robert and Ella Anschuetz at the Levis's home in Alton, Illinois. Dr. and Mrs. Anschuetz and Mr.

Levis are trustees of the Monticello College Foundation, which had been formed to carry on the work of Monticello College after its closing.

OVER DINNER, they asked Dr. Danforth whether a grant of approximately \$100,000 a year would enable Washington University to undertake a program which would carry forth the tradition of women's education begun by Captain Benjamin Godfrey in 1835 when he established the Monticello Female Seminary.

Although the temperature had dropped and the snow deepened, when the party came to a close, Dr. Danforth glowed. That glow has never dimmed. "It has always been a favorite program of the Chancellor's," notes Ralph Morrow, now dean of the faculty of arts and sciences.

It was to Morrow, as dean of the graduate school, that Danforth first brought his proposals for the fellowships, which are named to commemorate the Olin's long involvement with Monticello and Washington University. The Chancellor suggested graduate support for women preparing for careers in higher education. The trustees of the foundation emended that to include women training for careers in the professions.

The final proposal launched a graduate program for women's education unique to American universities by virtue of its commitment and size. From five to ten new fellows a year are admitted to the University. Each award carries up to \$4500 annual support for four years or until the

completion of the graduate program, whichever comes first. At present, some twenty Olin fellows receive support and several former fellows are completing studies begun under the Olin program.

Although the Olin conference on women is funded annually by a separate Monticello foundation grant, it is, in reality, an important element in the overall fellowship program. A two-day scholastic event, it inquires into some aspect of women's status in American society. Last fall's topic was "What Are the Prospects for Women in the Professions?" Previous conferences examined what science has to say about women, women and the news, sex roles in American society, and women's status in higher education and the professions.

KEYNOTE SPEAKERS have been Sir Peter and Lady Jean Medawar, British biologists; journalist Sally Quinn; Stanford University professor Eleanor Maccoby; and Juanita Kreps, former Secretary of Commerce. The two full-length books that have been published from transactions of the conference indicate its academic stature.

The central purpose of the conference is to touch the lives of all members of the University community, to heighten their awareness of and inquiry into feminist issues. But its side effects for fellows are equally impressive. It becomes an occasion for fellows representing various disciplines to work together; it renews their awareness of the

University's concern for women; and, importantly, it introduces fellows socially to conference speakers, faculty members on the Olin selection committee, trustees of the Monticello foundation, University administrators, and each other.

ALTHOUGH SOCIAL events arranged for fellows by University administrators and Monticello trustees may seem trivial, they are not. On the spring weekend when Olin fellowship finalists are brought to campus, current fellows and faculty participate in the reception/interview process. Also in the spring, the foundation trustees invite fellows, former fellows, faculty, administrators and all spouses for a dinner at the Levises' home. In addition, fellows are invited in the fall to the former Monticello campus in Godfrey, Illinois. There, a reception is given at the Evergreens, once the president's home and now foundation headquarters.

"Those events somehow give you a sense of roots," comments a fellow. Another observed that she enjoys them because in meeting other fellows, "I'm always stimulated by finding myself in conversation with an intellectually vibrant woman."

These phenomena of the Olin fellowship and conference are, of course, what sociologists refer to as "networking." David Kirk, acting dean of the graduate school, is loath to call it an "old girls' network," but that is exactly what he and other friends of the Olin fellowships hope to establish and reinforce.

"Whether this happens now to the extent that these ties continue beyond graduation is important, but not crucial," says a former law fellow. "The few times a year we are together bring each of us back from her isolated educational enterprise. As fellows we have an interdisciplinary community of achieving women that other women students, even on this campus, don't have."

Fellows are selected by a committee made up of six faculty members and the dean of the graduate school. "Most applications come directly to the graduate school as a result of the literature we mail to undergraduate schools and distribute in other ways," said Kirk. "We ask the departments in which students propose to work to rank applicants academically."

"The committee then tends to look at qualities such as orientation, motivation, intellectual breadth and curiosity, and commitment to human services. We consider these intangibles in order to make the broadest impact with our program. Because we do not always offer fellowships in the order of a department's preference, there may sometimes be some misunderstanding between the committee and the departments, but overall communication is very good."

Ralph Morrow emphasizes that the University sees its charge from the foundation as an opportunity to broaden the avenues for advanced study available to women. "Therefore we give very careful consideration to candidates who propose to enter fields in which there are few women, such as math, physics, or

graduate engineering. We also make a very deliberate effort to distribute the fellowships, but our selection is always based upon the quality of a candidate's credentials."

The validity of the committee's selections is seldom challenged. Professor of law Frank Miller comments, "Our first three Olin scholars—Diane Sleek, Jill Whitley, and Ruth DeBartolo—were among the best law students this school has ever seen. If they did not rank first or second in their classes, I'm sure none of them fell below fourth."

IN THE BEGINNING years, nine or ten fellowships were awarded. As the number of fellows has compounded, new appointments have dropped to five to seven annually. In addition, a significant percentage of recent Olin fellows have been students of medicine, law, and architecture.

"To a notable extent," comments Morrow, "the market governs who accepts our offer. Fewer of the early fellows were in the professions, but our support (topping at \$4500) has lost some of its competitiveness in arts and sciences as tuition has risen and outside support has matched that. In law, medicine, and architecture our efforts are competitive because there is no significant grant support available. Although the market has changed, so long as our offers continue to attract high-quality students, I do not believe we will increase support at the expense of electing fewer fellows."

Morrow points out that with rising costs, the original



In 1975, Mr. and Mrs. Spencer T. Olin received the award of the University's William Greenleaf Eliot Society in recognition of their contributions to Washington University. Last year, the Women's Building became the Ann Whitney Olin Women's Building in memory of Mrs. Olin, who died in 1976.

cooperative basis—in which the foundation provided financial support and the University provided academic support—has changed to a much closer partnership in which each party assumes a financial burden. That fact, says a current fellow, is counted much in the University's favor by the fellows and the candidates to whom they talk. "We are all very impressed by Washington University's concern for women's education."

A HIDDEN BENEFIT of the Olin Fellowship program is the high quality of the applicants which it attracts and thereby introduces to Washington University. In a recent article in the *Christian Science Monitor*, Helen Riesenberg of Washington University discussed the University's undergraduate merit scholarships, pointing out that many of the finalists who are not awarded the fellowship they applied for—and some candidates who are not even finalists—come to the University anyway "because they learn a good deal about it and benefit from the attention paid them." The Olin fellowships are a graduate-level counterpart.

The original literature on the Olin fellowships, and perhaps actually the original concept, seemed aimed at women entering graduate or professional school directly from a baccalaureate program. In fact, the current literature still carries the term "young women." That descriptive adjective will be dropped in the next printing. "In reality," says James G. Miller, professor of physics and Olin committee

member, "the number of candidates seeking to renew their education as graduate students has grown steadily so that by now these candidates probably predominate."

LAW FELLOW Adele Konkel, now in her second year, was a lay judge in rural Kansas prior to entering law school. Social work fellow Marion Hunt graduated from Radcliffe in 1963 and had come to St. Louis when her husband became head of the Medical School's department of physiology.

"I think Marion Hunt is a good example of the kind of careful thinking that goes into the selection process," said Zola Packman, associate professor of classics and Olin committee member. "The fact that she was the wife of a faculty member was not overlooked by us. We discussed it at length and decided that it would be unfair to discriminate against her on that basis. We do not consider husbands, except to note that if the candidate is married, and perhaps has a family, the application itself may say something about the commitment which the candidate and those who are close to her are willing to make."

Hunt also exemplifies the rippling influence on women's education that the Olin program can effect. Her doctoral research has led her into teaching two courses on women and writing several articles on women's contributions to the development of pediatrics as a medical speciality. Not all Olin scholars make this immediate and direct contribu-

tion, but the seeds of influence are sown and dispersed by many. Three of the first Olin fellows are now teaching and three more are completing programs which will lead them into academic careers.

"That kind of role model is tremendously important to women," said one fellow. "To be told that there is no prejudice against you as a woman in this field, but to find few senior and few more junior faculty members who are women is troubling. Either the institution is hypocritical or its liberated viewpoint has been very slow in coming."

WHAT CAPTAIN GODFREY, who founded his small college for women 145 years ago, would have thought of the Olin fellows challenges the imagination. His was a pioneering venture that set on the American frontier an enterprise the enlightened East had begun only a few years before. The act must have taken daring and strong commitment of time, money, and self. Yet in a letter of 1842 to Theron Baldwin, the first principal of Monticello, Godfrey clearly indicates that he believed in educating women to undertake "women's responsibilities."

"... One of our little children, that had just begun to lisp a few words, caught (my wife's) remark, and while playing by itself on the floor, repeated it over and over for some time. This led me to reflect on the powerful effect of a mother's example on the mind, manners, and habits of their offspring, and the no less powerful influence that women have over society at large. The mind is formed to a great extent in

childhood, and while under the direct care of the mother. . . . With these reflections, the idea came into my mind to erect a seminary, in which females could, with the blessing of God, be prepared to discharge their numerous, arduous, and responsible duties. . . ."

The twentieth-century development of Captain Godfrey's seminary was a preparatory school and a two-year college of good academic standing. Many of its graduates finished their baccalaureate education at other institutions. But that fact does not completely explain the experience which has engendered such fond loyalty in hundreds of Monticello graduates.

IN THE 1960s and 1970s the college's board fought valiantly to preserve the institution. Many members of that body, and of the foundation board, count their ties to Monticello by the generation. Included in these was Ann Whitney Olin, who was a trustee, board chairman, and in summer 1966, acting president. Her devotion to Monticello seemed boundless.

Still, the school's small endowment, coupled with the sociological movement away from women's colleges, finally precipitated the decision to close its doors. The campus was sold to become the site for Lewis and Clark Community College and the resulting funds form the major portion of the Monticello College Foundation endowment.

"One must pay tribute to the courage of these trustees," said Morrow. "The decision that it was in the interest of students and

higher education to close the school could not have been made easily by those whose ties were so strong. As courageous was the decision to turn its funds and attention to the nurture of the needs of women in higher education in the last decades of the twentieth century."

Foundation chairman Dr. Robert Anschuetz denies that either of these decisions took courage. "We had no choice in the former, and the latter fit the original charter's commission to promote female education so well that it did not even require amendment to that end."

The bulk of the foundation income goes to Washington University. The remainder is distributed in small grants to enterprises of women's education. "We do not fund bricks and mortar," says Anschuetz. "We look for places where our small foundation can make some impact. We like to pick up requests for grants in which there is some creativity. We like to provide seed money where it might make a difference."

In that vein, small grants to St. Louis University aided in establishing an evening MBA program which by 1977 had enrolled 125 women. Prior to its beginning, only twenty women had received the MBA degree from that school. The program, now well established, is no longer aided by Monticello.

Other foundation grants range from support of postdoctoral research at Chicago's Newberry Library and field internships with an Illinois archeological program affiliated with Northwestern University, to scholarships and

"workshops" at several small colleges, to travel grants for ballet conferences, to support of a speech laboratory for secretarial students in midtown St. Louis.

THE DESK in the Evergreens occupied by Winnie Delano, a Monticello alumna and foundation executive secretary, is a treasury of personal notes from recipients of the foundation's grants and reports on foundation supported programs of dizzying variety. Her enthusiasm for these and for the Olin fellows and the pride which the foundation trustees take in creatively stretching foundation dollars "to promote the education of women" speak of the roots which Olin fellows feel and of networks and networking.

The University shares the foundation's pride in the Olin fellows and their achievements. The success of the program was summed up recently by Chancellor Danforth: "The Mr. and Mrs. Spencer T. Olin fellows have distinguished themselves in their graduate work and are continuing to excel in their chosen fields. I believe these are the results that both the Monticello College Foundation and Washington University hoped for when the program was launched six years ago."

Olin Fellows

IF IT HAD NOT been noted that using the word "bright" can be a subtle sex putdown ("smart" men and "bright" women), Rita Willett would be aptly described as bright. Her eyes sparkle, her smile is quick and sincere, her mind races. She has an air of confidence, of comfortableness with herself, of tolerance. In her third year as an Olin fellow, Willett is a junior at the School of Medicine.

She is waiting out her last years of medical school, enjoying them, learning, being challenged by a rigorous clinical teaching situation and content with the breather of a less rigorous one. She is good at school, but she is ready for something else.

A native of Omaha and a graduate of Oberlin College in Ohio, she came to science through an intellectual affinity and to medicine through a psychological one. Her undergraduate major was chemistry, but as she progressed in that field, she realized that life in a chemistry laboratory was far too removed from human interaction to satisfy her. She decided to continue her education in medicine.

"There are days when I come home from the hospital swearing that I am going to be a plumber, but I have no serious regrets about my choice. The more I do of medicine, the more I like it."

Willett is one of five children—three boys and two girls. Her father installs restaurant equipment and her mother is an elementary school librarian who began to work as a volunteer when the youngest of her children entered school and turned that position into a full-time job.

"Our parents' expectations," Willett says, "were that we would all earn bachelors' degrees and take bachelor degree-level jobs—that was the education they did not have. My professional aspirations came later."

At home, she was never conscious of a different level of expectations or a difference in treatment because she was female. Her father taught her to pitch baseball and to repair the car. Her parents were supportive and encouraging, but insisted their children work hard. They did.

She attended a Catholic girls' high school which in retrospect

she sees as having advantages and disadvantages. "I did not learn to compete against men, but simply by circumstances, I accepted the fact that academic performance and success were expected of women. I also developed strong friendships with girls and women."

AT OBERLIN, other chemistry majors formed her peer group. Since eight of the thirty were women, she became accustomed to the three to one male-female ratio which she now experiences at the medical school. These eight women developed strong, sup-

portive relationships, "very consciously so," she says. They liked each other, saw each other socially, and did their studying together.

"For women in medicine, the Olin fellowships are a gift," Willett says. "There would be no other way for me to finance my medical education without assuming a very large debt or a commitment to the U.S. public health or the armed services." The latter alternative would delay her career choices and perhaps even limit them.

"The fellowship has meant a great deal to me personally, but, in addition, it is very important for an institution in our society to take positive steps toward insuring that women have access to all education. This is that kind of a positive step taken by both Washington University and the Monticello foundation."

IN MEDICINE, Willett says, there still exist "very subtle kinds of discrimination. For instance, in the classroom there is almost no prejudice expressed, but working clinically you run into men whose attitudes are not quite what you hope they might be. While I was doing my rotation through surgery, one of the young housestaff members said 'Well, it's not important that you learn that, you're not going into surgery anyway.' And that was someone who is my peer."

Rita Willett has not decided on the medical specialty she will pursue. Her leanings are toward internal medicine (which at WU has yet to have a woman chief resident) or, of course, toward surgery.



JILL WHITLEY recalls a gathering of Olin fellows at which another member of the program approached her, put out a hand and said, "Hi, I'm Nancy Pope. I'm a medievalist."

"I was so startled and delighted at the concept of a young woman who could introduce herself as a medievalist, I was speechless," Whitley says, explaining that the incident came to characterize the Olin program for her. "As fellows we were not close friends, but we were a group of women in various fields who were serious about our careers. I felt support for my own career goals in being part of such a group."

"The financial support provided by the Olin fellowship was important, too—in fact, it was the determining factor in my choice of law schools. The other advantage of the Olin fellowship for me was that it gave me a tie to the whole University. Because of the demanding nature of the work, law school was often an isolated and isolating experience."

Jill Whitley is a softspoken, thoughtful young woman who is now in her second year as an assistant professor of law at Southern Illinois University, Carbondale. So stringent are her self expectations that the mantle of a law professor is not yet comfortable for her. She did not seek it so soon; it sought her. "I enjoy my students and the informal atmosphere of the school. And I appreciate the opportunity to deal more theoretically with the law than I could in practice. My main dissatisfaction is that I don't think I'm good enough. When I be-

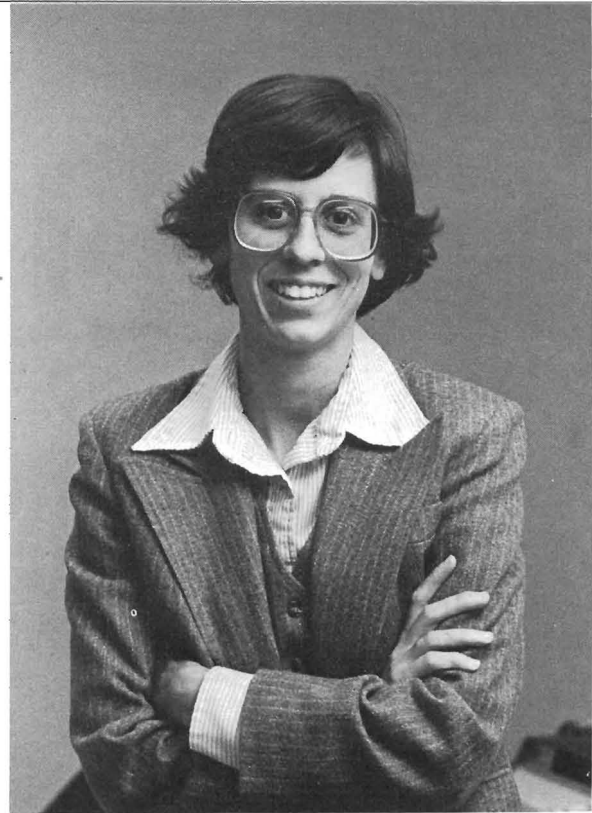
come impatient to be so much better, I try to remember that it just takes time. After all, my role models are people who have taught for twenty years."

Whitley grew up in Kansas as one of six children in the family. Her mother graduated from high school, worked for a time, then married and raised a family. Her father studied law late in life and is now with the Small Business Administration. Her siblings are all college graduates or are in college.

"I always believed that I would have a career. That much was very clear to me, even as a child. I never pictured myself being taken care of by someone else; I always assumed I would have my own work and make my own way. I also wanted to work to help others and contribute to society in some way."

With that predisposition to a service career, Whitley entered the University of Kansas to pursue a bachelor's degree in social work, but a field placement with the juvenile court turned her thinking to the law. "I wasn't satisfied doing social work. It just didn't fit me. I was uncomfortable with its vagueness and lack of structure. I decided to go into law because it seemed that as an attorney I could provide a more concrete service to people and, I hoped, achieve more clearly definable successes."

She entered law school as an Olin fellow and graduated very near the top of her class, working meanwhile on a women's prison project and a summer research program in Sioux Falls with South Dakota ACORN (Association of Community Organiza-



tions for Reform Now).

Upon graduation she accepted a position as assistant attorney general in the office of the Attorney General of Missouri. Then in March of that first year, she was offered a teaching position. "I wondered whether I should stay in practice, to gain more practical experience and to decide if that was what I wanted to do, but I couldn't turn the offer down."

SHE IS NOW teaching contracts, legal writing, criminal justice administration, and a seminar on labor law. As one of three women on the law faculty there, and as a member of the faculty recruiting committee, she has noticed no prejudice for or against women in the selection of faculty at the school. "We really don't say, 'Now for this job we need a woman.' We recruit by deciding what we need taught and then looking at all candidates. But I find the women very impressive. They not only have very good credentials, but they also have a confident way of handling themselves."

She finds the greater flexibility and tolerance of different personality types attractive features of

the academic lifestyle, but she believes women in all areas of the profession still have obstacles to overcome and special concerns to voice. "As women students, we were aware that the world of legal practice out there is a man's world. We worried about combining career with family: if we wanted both did that mean, or would it appear to our colleagues and employers to mean, that we weren't dedicated to our work?"

"We worried about personality traits. Did we want to be brusque and competitive? Would we *have* to be? I don't think our male counterparts ever thought about these things—at least they didn't express their feelings as we did. Perhaps they just assumed they fit the model."

Occasionally she wonders if her students take her less seriously because she is a woman. "It's difficult to tell because there are so many variables which affect how students view a teacher. I suspect that my age, inexperience, and relaxed approach to teaching are the more important variable right now. I'm not quite as authoritarian a figure as some of the other professors. But that's OK—I don't want to be."

MARION HALL HUNT never uses her maiden name as a part of her identification though it is melodiously alliterative and looks quite elegantly formal. In her mind, however, Marion Hall and Marion Hunt are distinctly different individuals.

Marion Hall grew up in the New York suburbs and went to Radcliffe College, majoring in art history. She received the AB degree in 1963, worked two years for Yale Art Gallery, and married Dr. Carlton Hunt, then chairman of the physiology department at Yale Medical School. In 1967, he joined Washington University Medical School. Their son, Nicky, was born in February 1968, and that fall Marion Hunt began graduate work in art history.

"I'd had a completely suburban upbringing," she explains "and for the first time I was living in a city and seeing poverty at close range. Somehow, art history didn't make sense in that setting, so I dropped out." Instead she began doing research on a child health project. By 1972 she had decided to pursue a master's degree in social work. "In child health, I had found a subject that combined an academic challenge with a practical concern." So Hunt returned to Washington University.

Her student placement took her to St. Louis Children's Hospital, but as a medical social worker, she felt frustrated. "Two children would come in with a similar physical problem and, just because they lived in different states, might receive differing amounts of medical coverage.

This often caused additional strain for families, and I began to want to understand how such policies developed."

For a term paper on the history of a local institution she chose to study Children's Hospital, "little realizing that it would turn into a dissertation topic," she says with a smile. Hunt received an M.S.W. degree in 1975, aware that she was more interested in social welfare history than in clinical social work. "And I was lost. I didn't know what to do next. Then my husband brought home an Olin Fellowship announcement and encouraged me to apply. I felt my chances were slim. I was over thirty-five, a faculty wife, and certainly not in 'need' of a fellowship. I've since learned that the definition of need is very complex. I cannot tell you what the Olin stipend means to me; it has to do with my own self respect and with knowing that society values what I am doing."

Marion Hunt came back to George Warren Brown as an Olin fellow to study the history of social welfare. "Having close contact with Professors Ralph Pumphrey and Paul Stuart, both social work historians, was crucial for me," she says.

AS A DOCTORAL STUDENT, she took courses across the graduate and professional school curriculum; she began to see child health from the viewpoints of the political scientist, the urban specialist, the historian. "Even then, when I focused on the history of Children's Hospital, I didn't see its special relevance to women's history. I knew that women had founded



and run the institution successfully for thirty years before it affiliated with Washington University Medical School. Yet I had no intellectual framework for understanding the implications of this.

"The history of women was not taught when I was an undergraduate. Although there are now courses on women in history, I had to learn this on my own.

"Gradually I realized that my research was part of this new scholarship. The hospital's development was in large part a history of St. Louis women's involvement in social welfare. Women were able to found and run the hospital because anything having to do with children was considered 'women's work.'"

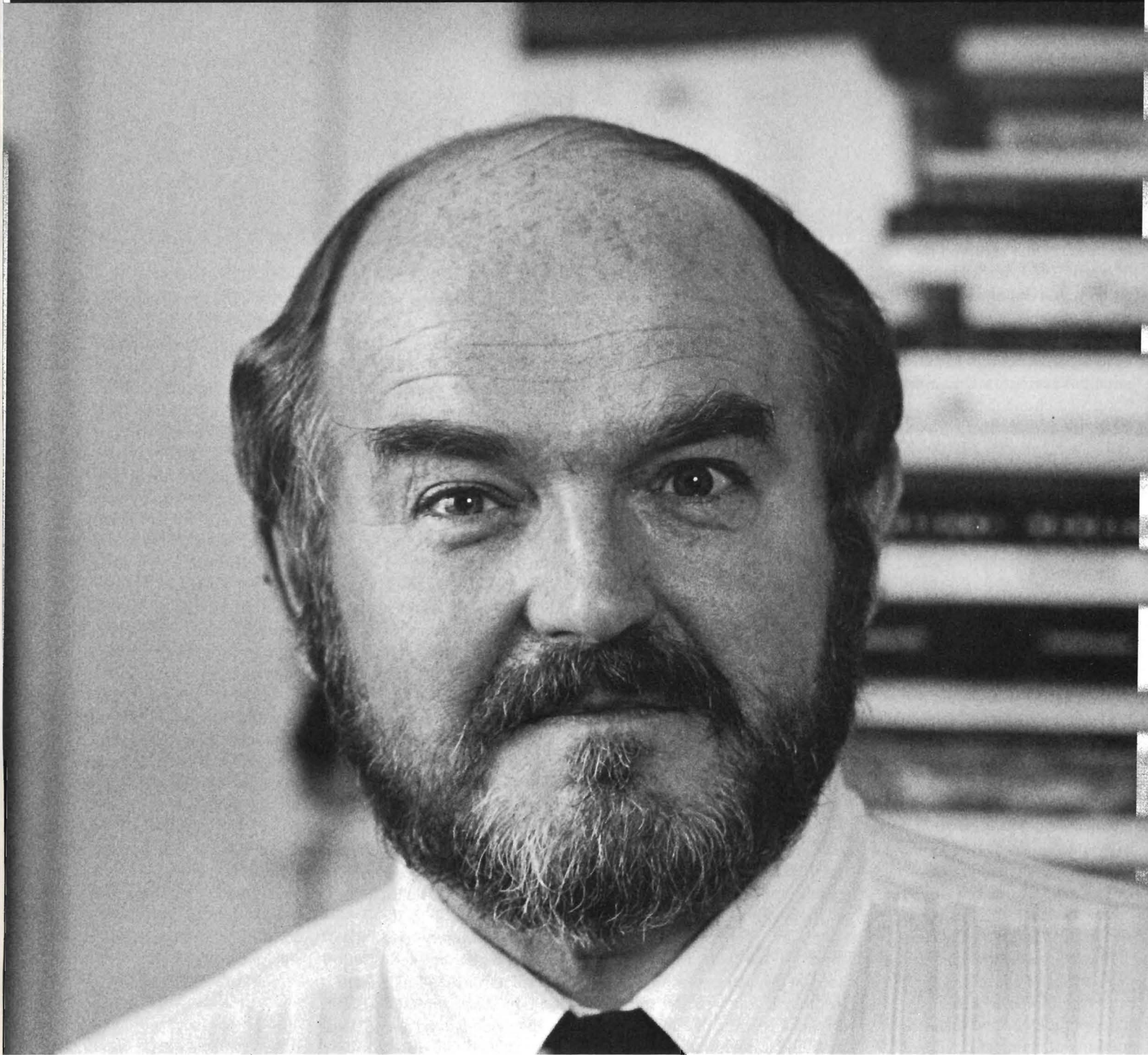
To share her knowledge, last spring she initiated a course on women and social reform. This spring she is collaborating at the Graduate Institute of Education on another new course—the history of women in American education.

"The opportunity to teach has helped complete the fellowship experience for me. I can share what I've learned in the last four years in ways that have enriched my research."

LAST FALL at the Olin Conference, Hunt presented her first formal paper to Jill Ker Conway, president of Smith College. The subject was "Women and Childsaving: St. Louis Children's Hospital, 1879-1919."

"This experience was a fine way to end my years as a fellow and to begin my career as a scholar. When I went to Radcliffe in the early 1960s, few of us were sure that we would use our education in the real world. Today's young women are the first generation to grow up knowing that most of them will support themselves or help support their families. There is still some ambivalence about educating women—a concern that professional women may not function as well as wives or mothers or that, if they marry, they may not do as well as scholars or professionals. My experience has been that, with a supportive family, it's possible to meet both domestic and professional responsibilities."

Kultermann



By Dorothy Brockhoff

Udo Kultermann, professor of architecture, is a man at home in many cultures. His scholarship ranges from ancient architecture to modern art, and he has always insisted that the study of any artistic discipline is enriched by relating it to the other arts. His own life as a museum director, a critic, an author, and a teacher animates that thesis.

IN RECENT MONTHS, Professor Udo Kultermann of Washington University's School of Architecture has become a transcontinental commuter between two cities whose shorelines have shaped their character. His port of departure is, of course, St. Louis, which fronts on the great meandering Mississippi; his destination is Venice, which straddles the Adriatic. Jetting to and fro has become virtually a monthly habit for Kultermann since last fall, when he was accorded the rare honor of being named to the five-member Architectural Section Committee of the Venice Biennale. His colleagues on this prestigious body are three prominent Italian scholars and one American: Paolo Portoghesi, its president; Costantino Dardi, professor of architecture at the University of Rome; Giuseppe Mazzariol, professor of contemporary art at the University of Venice; and the well-known American architect Robert A. M. Stern of Columbia University.

They are planning an architectural extravaganza for the summer of 1980, which should be as spectacular as any ever arranged at this world-famous exhibition of the arts held every other year in Venice. Known when it was first held in 1895 as the Esposizione Internazionale d'Arte della Citta di Venezia, the Venice Biennale is an event which Kultermann first came to appreciate when he was invited to participate in 1962.

At that time, he had just begun to achieve a measure of fame in Europe as a rather brash, bold, and gutsy young museum director from Germany. Today, as one of the preeminent art and architectural historians of the world, he holds a tenured appointment as a scholar-teacher at Washington University. Then, as now, he was controversial—a man of conviction in the vanguard of the arts, whose views, as expressed over the years in his prodigious writings, have made him a prickly gadfly whom some critics applaud, some heckle, but few ignore.

Kultermann published his first books in the late fifties and since that time he has become something of a publishing

phenomenon, averaging a volume a year for more than twenty years. Most of them are concerned with the art and architecture of the last four decades—volatile subject matter which frequently evokes emotional response. A spate of studies which he published on the culture of the 1960s attracted widespread attention and established him as a spokesman for the avant-garde. These works included the *New Architecture in the World* (1965), *The New Sculpture* (1968), and *The New Painting* (1969). Undeterred by flak from such arbiters of the art world as the late Harold Rosenberg of *The New Yorker* (who was incensed by Kultermann's effort in *The New Sculpture* to explain how the creations of this decade constituted "an expansion of the artistic system"), the doughty professor opted to culminate the series with the publication of *Art and Life* in 1970.

Its purpose, he announced in his introduction, "was to show the relationship of this culture to reality, or, in a broader sense, the function of art in our epoch. The accents," he continued, "have changed in all facets of life and art—from the abstract to the concrete, from the isolated to the all-encompassing—and the all-encompassing is reality itself." In this work, he focused on "the spiritual ancestors of the elements that, taken together, are called intermedia." For him, the quintessential embodiment of this trend was the Happening, of which he wrote, "the powers of imagination are often not easily analyzed; there is much that cannot be rationally decoded; there is an ever-present risk of failure." That is why, he concluded, "Happenings touch closer to the heart of the human situation in our time than any other form of contemporary art."

In 1972, he published still another work, *The New Realism*, which again sent some critics scurrying to their typewriters in protest. Writing in *Newsweek*, Douglas Davis denounced Kultermann as a "critical scoundrel" for insisting that this new realism was "directing our perception to a new order of reality, a new way of seeing." Kultermann, however, was not

dissuaded. He contended "that our contemporary realists, too, have forged a new art by comprehending both traditional styles and modernity," and he continues to hold that view.

PRECISELY BECAUSE he is dealing with the subjective, Kultermann has learned to accept such impassioned polemics with equanimity. "Art and life are very heavily debated," he philosophized. "If a critic can prove to me that I have made factual errors, then I am willing to listen. I remember with gratitude the help that I received from the late Erwin Panofsky of Princeton University, who was, in my opinion, the greatest living art historian. In 1966, when I personally presented him with a copy of my *History of Art History*, he leafed through it quickly and instantly spotted some misspellings and other inconsistencies. Later, he wrote me several brilliant letters carefully enumerating mistakes of which I was unaware. I am always willing to learn, and happy to accept that kind of criticism, which is enormously beneficial.

"But when the skeptics challenge basic concepts, that is quite a different matter. If they are people whom I highly respect, I sometimes reflect for a long time. Then, if I conclude that I simply cannot accept their point of view, I say, no, I must still insist that I am right. One must be prepared to take a strong stand; otherwise, a writer can have no real independence."

Locally, Kultermann is probably best known for his book of 1978 called simply *Trova*. An analysis of the oeuvre of Ernst Trova, a St. Louis sculptor with an international reputation, it was some seven years in the making. The anonymous writer of the book jacket blurb for this handsome volume summed up its essence with the observation that "In tracing the artist's evolution from his self-taught beginnings to his present status as a sculptor of originality and force, Kultermann emphasized the continuity of Trova's work over thirty years, always returning to the theme of man as the point of departure." Like many of Kultermann's works, it is a lavishly illustrated, "coffee-table" book. Nowadays, such large tomes have become de rigueur in publishing circles, but it was not always so. Some seven years ago, when Kultermann's huge work entitled *Kenzo Tange—Architecture and Urban Design* first appeared (a paperback edition was issued in 1978), a reviewer, apparently overawed by its Gargantuan proportions, felt obliged to tote it to a scale. He solemnly reported that it weighed four pounds. Kultermann's admirers had always insisted that he wrote weighty books, but Theo Crosby, a London architect who served as a Visiting Professor in the School of Architecture in the spring of 1969, was the first to prove it literally.

Some authors might have been nonplussed by such a bizarre experience, but not Kultermann. Blessed with a sense of humor and an unflappable disposition, he is seldom distracted and rarely disturbed by the unexpected. An unusually efficient man

with the ability to juggle a variety of projects simultaneously, at fifty-two Kultermann seems to be at the peak of his productive career.

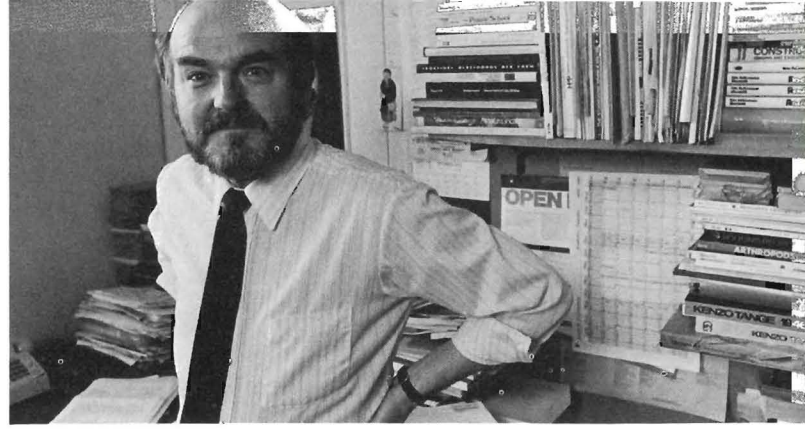
Polite, self-possessed, and patient, he was at his balanced best shortly before Christmas, as he somehow found time to be interviewed frequently for this article while continuing to teach, meet his year-end deadline for two books, prepare manuscripts for another two books, and pack for a quick trip to South America. In the midst of it all, he remained serenely self-controlled and in command of a situation which could easily have become chaos.

THE FIRST of the disparate books which he finished, entitled *The Basilica of Maxentius*, is a study of a great edifice built between 306 and 312 A.D. by the Roman emperor Maxentius. The second, *Architecture of the Seventies*, is a careful analysis of the emergence of a new kind of architecture unrelated to the "ambivalent and pluralistic images of the sixties." Learning of the latter project, two Argentinian groups, an institute concerned with the advanced study of the arts and an architectural organization, invited him to deliver a series of four lectures on this theme in Buenos Aires and Rosario.

Kultermann soared off to these meetings, confident that when he returned from this whirlwind trip he would have no trouble resuming work on two interrelated books dealing with the architecture of a covey of developing countries in the Southern Hemisphere. Slated for publication this year, they are respectively, *The Renaissance of Architecture in the Arab States* and the *Architects of the Third World*.

Kultermann had reason to feel sanguine about these projects because he has done a thorough job of research on both. As part of this effort, he travelled widely to interview many of the architects active in Arab countries as well as other sectors in the Third World. In 1976-77, he was the guest of the government of Morocco at the Second Arab Biennale of Art in Rabat. Kultermann also spent part of 1977 and several months of 1978 as a visiting lecturer at universities in Australia, India, Afghanistan, Syria, Jordan, Egypt, and the Sudan. Previously, he had made a study trip to Egypt and then continued on to Kuwait and Lebanon.

Coupling this firsthand experience with extensive reading, he opted last fall to teach a seminar on Third World Architecture in the School of Architecture. Such a course had never before been offered at Washington University, and Dean Constantine Michaelides of the School of Architecture said that he knew of no comparable course elsewhere. "Udo is an innovator," the Dean explained. "It says something about his character that he wanted to do it here. He simply will not permit himself to be trapped into giving the same course year after year." Kultermann said that the



class enabled him to debate his theories with a vital, challenging group of students. "It's interesting to compare ideas. Frequently," he confided, "I have revised specific chapters after reflecting on feedback from the class."

Comments from a trio of students who were part of the seminar confirmed that they, too, had enjoyed this unusual learning experience. The young women, Laura Billisits, Melanie Francis, and Wendy Peskin, explained that each person in the seminar had prepared a paper on a Third World architect. These reports, in turn, were mimeographed so that each student was able to glean insight from other participants.

They agreed that Kultermann helped them understand that architects like Charles Correa of Bombay and Oluwole Olumuyiwa of Lagos, Nigeria, although educated in the Western world, are beginning to design buildings that reflect their own traditions. His insight had enabled them to appreciate the determined efforts of these men to incorporate a growing sense of identity with their own peoples into their work. These pioneering architects are demonstrating this basic conviction through an increasing use of indigenous materials.

Early in January, Kultermann and Dean Michaelides were both invited to speak at the International Symposium on Islamic Architecture and Urbanism at King Faisal University in Saudi Arabia. Kultermann talked on "Young Arab Architects"; Michaelides on "Site, Space, and Architectonic Form on the Aegean Island Towns."

Kultermann's research and his literary accomplishments also make him an effective and exciting teacher. Happily, he is blessed with the temperament and talents to perform these varied tasks with elan and good humor. His *joie de vivre*, in turn, is very probably the result of a fortuitous mix of genes and a gift for writing. Unlike many of his fellow authors, Kultermann views the blank page with glee rather than gloom. "I know from the beginning to the end what I want to write. It then becomes simply a mechanical effort of typing," he explained.

For many years, Kultermann wrote his books in German, his native language, but nowadays his typewriter spews out English prose except when he is doing a book specifically for a publisher in the Rhineland. His English is flawless although he speaks with a charming accent.

KULTERMANN WAS BORN in 1927 at Stettin, the capital of what was then Pomerania, a part of eastern Germany now considered part of Poland. The only child of Georg and Charlotte Kultermann, he was a lad of twelve when World War II began in 1939. Recollections about that time are painful for Kultermann, who refers to it as "chaotic." At age seventeen he served briefly in the German Navy. When the Russians occupied his hometown in

1945, he avoided becoming a prisoner of war by joining the German equivalent of the Merchant Marine. On this tour of duty, his ship sank and he had to be fished out of the Baltic.

AFTER A SUMMER in that service, he made his way to the University of Greifswald, where he studied from 1946 to 1950. Because his high school diploma and all the records of the gymnasium he had attended were lost, he spent a year at the University completing a special curriculum. Then he was accepted as a regular student and chose to major in art history and German literature. "Those were marvelous years," he recalled. "Although we were in East Germany, which was occupied by the Russians, our faculty had a wonderful attitude of independence. I remember that the dean of the philosophical faculty spoke out openly against historical materialism, the basic ideology of the Communist party. Life was exciting, but there was also high tension."

Kultermann also studied sculpture, painting, graphics, music, and philosophy in what he remembers as a "wonderful learning environment" at that university, which traces its origins to the fifteenth century. Gradually, however, as he became more and more engrossed with the visual arts (especially history and architecture), he felt thwarted because he was not permitted to travel. "I hoped to pursue a museum career, and to do that I felt I must visit the great centers of art in Italy and France. I finally made up my mind to leave East Germany." Surreptitiously, his teachers arranged for him to be admitted to the University of Muenster in Westphalia, a part of West Germany. When all was ready, he escaped by swimming across a branch of the river Elbe.

Kultermann tells the story matter-of-factly, with no hint of the danger or the difficulty. When pressed on this point, he says simply, "If I had been caught, I guess there would have been problems. They might not have been severe, but, yes, I certainly would have had problems."

Kultermann was twenty-two in 1950, when he enrolled at the University of Muenster to concentrate on art history, archaeology, and German literature. He graduated three years later, *magna cum laude*, having completed a dissertation (which he later expanded into a full-length book) on the Baroque sculptor Gabriel Grupello. While at the University of Muenster, he indulged his taste for travel, which has never abated. Rarely, however, did he have more than a few marks in his pocket. "I found out," he explained, "that you can manage with very little. When you are young, you don't need much money."

Although life was very different at the University of Muenster, a conservative institution compared to the University of Greifswald, Kultermann found his studies there exhilarating. "I became more and more intrigued by the relationship of literature to architecture, and I also marveled at how music has influenced

sculpture. Ideally, although I never expect to realize it, my goal would be to achieve a thorough understanding of the interrelationships between all of these cultural fields. These would include not only painting, sculpture, literature, and architecture, but also music and dance."

Kultermann is still captivated by that dream. "I've thought a lot about Paul Scheerbart, a German writer and visionary who wrote about glass architecture in 1890. He suggested creating buildings of glass which would free people from what he called 'prisons of stone.' German architects including Walter Gropius and Bruno Taut, one of my favorites, were influenced by him. Taut, who I think may have been an even greater master than Gropius, did some pioneer building in glass." Kultermann has written from time to time on Taut, and he has published a catalogue of the correspondence of numerous architects living in Berlin in the early 1920s who secretly called themselves "The Glass Chain."

He has also devoted much thought to the influence which composer Igor Stravinsky's *Firebird* may have had on the great Rumanian sculptor Constantin Brancusi. "In one of my most recent books, *Scultura Contemporanea*, published last year in Milan (an English version is due out in a year), I elaborated on this subject. We know that Brancusi and his great friend Erik Satie attended the premiere performance of *The Firebird*. What effect did that have on Brancusi's creation of his beautiful *Bird in Space* sculpture?"

SPECULATION ABOUT such interrelationships has engrossed Kultermann throughout his career, and it has led him to pursue research which has enriched his life, and, on occasion, lured him in a variety of directions. That he has been able to investigate so many diverse avenues of thought is a tribute to the kaleidoscopic education he received in the land of his birth.

Despite his brilliant academic record and encyclopedic education, however, Kultermann had difficulty finding a job. After completing his studies at the University of Muenster in 1953, eventually, he was hired for a year at a "miserable salary" by a Bremen museum. Life was not easy, but Kultermann refused to become discouraged. He began, instead, to publish articles not only on Baroque sculpture, but also on a plethora of other subjects. While in Bremen, he discovered the papers, an unknown diary, and books of Kazimir Malevich, one of the greatest Russian pioneers in modern art of this century. The work made a lasting impression on Kultermann.

In time, he became engrossed in the study of contemporary art, and he began to seek out young artists in Germany, Italy, and France. These contacts enabled him to publish more articles, but for several years after leaving the

Bremen museum he had no regular income or permanent job. He worked briefly as an art historian, editing articles for an encyclopedia, but in this case he found this work terribly frustrating. Finally, in 1957, he became program director at the American House in Bremen, operated by the United States Information Service. His responsibility was to plan cultural programs for all of northwest Germany. Kultermann began to lecture on Alexander Calder, Jackson Pollock, and other American artists and on whatever American topic struck his fancy. "It was a marvelous opportunity," he recalled, "and it paid well."

MEANWHILE, he became more and more fascinated with the study of architecture. His interest in this subject had actually begun in his student days when a colleague had asked him to write on architecture for a major encyclopedia. Kultermann gradually became recognized as an expert and found himself writing and lecturing on the Chicago School of Architecture, Ludwig Mies van der Rohe, Frank Lloyd Wright, Louis Sullivan, and many others. Impressed with his knowledge, a German publisher, Wasmuth, asked him to write a history of modern architecture. In 1958, his first book, *Architecture of Today*, came off the press. "It was immediately translated into English, French, and Dutch," Kultermann recalled, "and suddenly I was a success." The Kultermann-Wasmuth association has been an enduring one. "Our collaboration," he said proudly, "is based on friendship, not business. We have never had a formal contract."

Kultermann brought out a second book in 1958 on *Hans and Wassili Lukhardt*, German architects of the 1920s who were part of the "Glass Chain"; a third, *Dynamic Architecture*, appeared in 1959. Their wide acceptance helped him find a job as director of the City Art Museum at Leverkusen, Germany. Kultermann headed this museum for five years and, during that period, acquired a reputation as an authority on modern art.

Many of the exhibitions he organized attracted worldwide attention. With one he did on monochrome painting as an antidote to abstract expressionism, "I identified Jackson Pollack and others in this school as expressing the psychology of war and disaster. To me, the newer monochromatic art symbolized peace. I wrote that it indicated that we were turning from chaos to a more orderly, social integration of the arts," Kultermann explained. "Soon afterwards in 1961, I did a special exhibition on Ad Reinhardt." Reinhardt did black paintings which "aspired to be material equivalents of the silences of his Trappist friend, the late Thomas Merton," according to Kultermann's nemesis, the critic Rosenberg.

But the event and exhibition that created the greatest stir at Leverkusen was one which Kultermann called the "Morsbroicher Kunsttage." Organized in 1961, it featured work

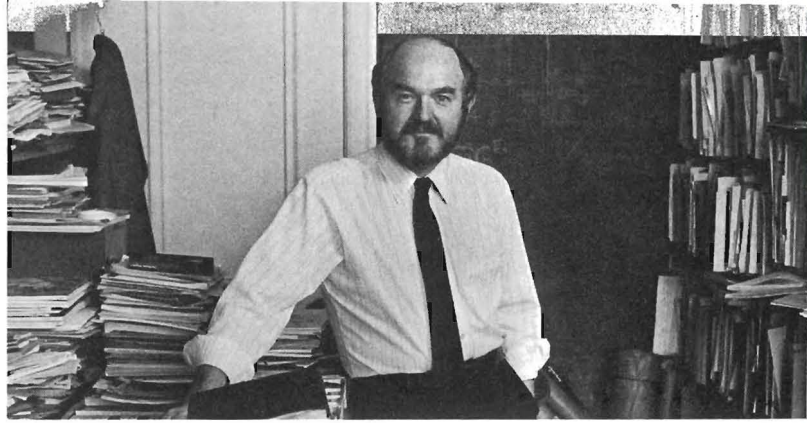
by talented people in a variety of cultural disciplines. Organized around the theme 'Out of Chaos Comes Clarity and Order,' the three-day festival featured dance, music, film, theatre, literature, graphics, and painting. Kultermann persuaded one of Germany's great philosophers, Theodor W. Adorno of Frankfurt, to serve as moderator. Adorno had been an adviser to Thomas Mann and is thought by some to have served as the novelist's model for Faustus. Other stellar scholars invited were Max Bense of Stuttgart, Monsignor Otto Mauer of Vienna, and Umbro Apollonio, who represented the Venice Biennale. "It was truly a great event," Kultermann recalls proudly.

This spectacle was in keeping with Kultermann's desire to take art out of the museum and into the marketplace. He invited artists, most of them unknown at the time, to create outdoor works for the city of Leverkusen. One was asked to paint a design on a great wall; another was commissioned to sculpt a fountain for the city hall. Among those who participated were Peter Stroud, now a widely acclaimed English painter, and Otto Piene, presently director of the Center for Advanced Visual Studies at the Massachusetts Institute of Technology.

During his tenure as museum director, Kultermann travelled widely and was invited to participate in the first International Congress at Salisbury, Southern Rhodesia. While there, he visited the great ruins at Zimbabwe, which are the culmination of ancient East African architecture. They refute those who claim that Africa had no great ancient civilizations. In 1969, Braziller, the New York publisher, persuaded Kultermann to do a book on African culture entitled *New Directions in African Architecture*. In it he wrote, "Throughout East Africa there were cities built of stone which today count among the world's greatest architectural achievements." During the sixties, Kultermann also travelled to Ghana and Senegal. "I came to know many black artists," Kultermann explained, "and I bought some of their works for the museum at Leverkusen." He added these to the collection of modern art which he gradually assembled. "My idea," he explained, "was to sell some famous holdings and buy unknown art. I wanted to create a museum which was always in the process of changing and growing." Unfortunately, some opposed Kultermann's plans, and, in 1964, when they refused also to permit him to stage a series of happenings, he resigned.

ONCE FREE, he was deluged with invitations. During the next few years he lectured in many parts of the world and led study tours to the Far East and South America. In 1965, he made the first of a series of visits to the United States at the invitation of Konrad Wachsmann, then head of the department of building research at the University of California at Los Angeles.

In 1967, on the recommendation of the noted German



architect Frei Otto (recipient of an honorary degree from Washington University in 1973), Kultermann was invited to teach on this campus for a year. He continued as a visiting professor until 1973, when George Anselvicius, then dean of the School of Architecture, arranged a permanent appointment to the faculty.

It has been a fruitful association. In addition to an impressive shelf of books, Kultermann has published more than 500 articles in scholarly journals, including the beautiful German magazine *Pantheon*, the Italian monthly *Domus*, *American Art Review*, the Japanese magazine, *A + U*, the Swedish *Konsthistorisk Tidskrift*, and dozens of others. His choice of topics is also eclectic, ranging from Thomas Alva Edison as designer of prefabricated housing (produced at a factory he operated in East Orange, N.J., in 1907) to "Vermeer and Contemporary American Painting." This spring, he is teaching a course based on his forthcoming book dealing with the architecture of the seventies to emphasize the new trends he sees. "Important changes are taking place," he emphasized. "There is a shift away from the dramatic expressions of the ego of the architect to the more traditional. It is an exciting time."

Despite all the change, there is an underlying order in architecture, according to Kultermann. He expressed this theme most cogently in his first book when he wrote: "The main criteria of architecture, however, have remained the same throughout all the phases of historic development, namely the realizations of creative imagination from space and volume, light and shadow, rhythmic tension and balance. Our age," he concluded, "has given a legitimate architectural expression to its inherent forces, the demand for order, fascination, social harmony, and structural audacity."



RAG

Last fall, Eubie Blake, the granddaddy of ragtime music, came to Washington University for Ragtime '79, a festival that filled Edison Theatre with music and people for four nights running. Blake shared the spotlight at the second annual ragtime celebration with Max Morath, a new professional ensemble, a St. Louis Ragtime Ensemble, based at Washington University that grew out of Ragtime '78; and a host of other ragtime performers.

Actually, Ragtime '78 (a festival originated by the Performing Arts as part of the University's 125th Anniversary celebration) was created last year, in part, around the incandescence of the name "Eubie." When Steve

Radecke, musical director of the dance division and an accomplished ragtime pianist, began to put together his festival in 1978, he invited Blake, his idol and mentor. Blake promised to try to come, but, in the end the opening on Broadway of *Eubie* and other attendant events made that impossible. With only a slim hope that Blake would be able to attend, Radecke went ahead, his plans undaunted.

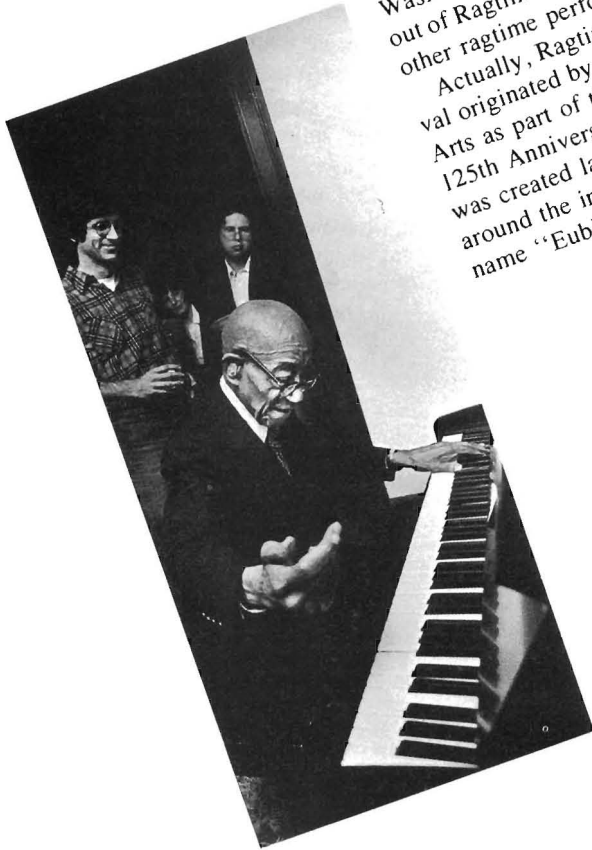
The wonder of Ragtime '78 was that its mix of ragtime music and contemporary dance generated its own electricity, even without Blake. Its producers and performers felt the spell of the event; its audiences felt it; and way back in New York, Eubie Blake must have felt that sweet music in his bones, for this fall when ragtime was to be celebrated, he was there.

His presence mellowed the event and gave it historical significance. It was as if a heady new wine had been aged by his 96 years.

St. Louis not only gave birth to ragtime, but in recent years, it has nurtured a considerable ragtime revival. In putting together the first festival, Radecke drew on a core of St. Louis musicians who included Bob Darch, University alumnus Trebor Tichenor and the St. Louis Ragtimers, and himself. To this Annelise Mertz, director of the dance division, added a company of dancers and choreographers who performed new works set to the ragtime beat.

What resulted was a concoction that turned the tribute to ragtime into a series of almost sold-out, memorable performances. It was so successful, in fact, that the company which made the festival go soon formed itself into the St. Louis Ragtime Ensemble and went on tour.

Last summer they took their program, entitled "Forever Ragtime," to Ireland. Darch and Radecke serve as pianists/narrators, performing solos and duets interspersed with original choreography. The result evoked



T I M E

Mertz) into marvellous syncopation, ragtime made flesh, the beat personified in movement and colour.

"Altogether, one helluvan evening."

Mertz and Cowell are professors of dance at the University; Armiston was an artist in residence here in 1978 and '79. Their dancers are members of their faculty and graduates of their program. Darch is the only non-University member of the troupe.

This fall, the whole thing was reprised, with the addition of Max Morath, a historian/performer of ragtime, and Blake (which opened the festival) drew 610 ticket purchasers for 689 seats. Every performance thereafter was sold out. The closing program on Sunday evening included Tichenor and the Ragtimers; pianist Don Burns; the

Amherst Saxophone Quarter; Terry Waldo, a Blake protege; and Blake.

Following Waldo to end the program, Eubie held up his song list (probably one that his wife Marion had made to jog his 96-year-old memory) and told the audience, "I wrote everything on here, except 'Stars and Stripes Forever.' I was around when it was written, but I didn't write it." Then he played.

Frank Hunter of the *Globe-Democrat* wrote:

"When the slender composer-pianist struck the final chords of 'Stars and Stripes Forever,' the audience swept Blake up in another rousing salute. Blake may have appealed to the patriotism in all of us, but the response he received honored a man not only for his remarkable alertness and vitality, but also for

his musical creativity and prowess at the piano."

Blake later said to Radecke, "Well, you know I did my best; I had some tough competition with you other guys." Ragtime, that ragmuffin of musical children, has been lovingly saluted once again by Washington University and 2852 St. Louisans.

this rapturous tribute from reviewer Robert O'Donoghue of the *Cork Examiner*:

"Darch and Radecke, the former made out of old leather and rich as some of them notes he sneaks in behind a piece of honky-tonk, also give with the lyrics, contrasting styles again—Darch, as it has to be, tainted with tobacco, dust, and liquor—but the taint is the toon: and Radecke, steeped to the gills in the same tradition, but with this personal style making the old rhythm a kinda new currency—the way Bessie did with the blues. . . .

"This sound tapestry is augmented with a visual one—the dance—incorporating a series of evocations of the era in send-up and caricature, very funny, very clever, and with all the handsome skill we associate with the American approach to ballet, like each muscle was itself a kind musical note, in this case choreographed (Gale Armiston, Mary-Jean Cowell, Annelise



The Kingdom of

THERE IS a reason why Lewis Carroll is better known than Charles Dodgson; why *Alice's Adventures in Wonderland* is in more libraries and homes than *An Elementary Treatise on Determinants*; why a greater percentage of the population would find it easier to believe six impossible things before breakfast than an interpretation of the Fifth Axiom of Euclid.

Perhaps Dodgson, an English mathematician and logician who published serious books under his real name and children's books under the pseudonym Carroll, was better at the art of parody and nonsense than at mathematics. But the larger reason is unavoidable—mathematics is not a particularly glamorous profession.

There is no Nobel Prize for mathematics. Famous mathematical research teams seldom make headlines. There are no shiny million-dollar pieces of equipment that the public has come to associate with this scientific exploration—no cyclotrons, body scanners, deep sea probes, electron microscopes, or high-powered telescopes. Research tools are plain. A calculator, pencil, paper, chalkboard, and maybe a quiet corner in the library serve the purpose in most cases. And in an era when some scientists' names have become household words—Einstein in physics, Watson and Crick in biology, Freud and Jung in psychology—most people are hard put to name even one great mathematician in recent centuries.

Yet mathematics is the bread and butter of most scientific disciplines, and, in a certain sense, it is the language of all experimental dialogue. A basic understanding of numbers and logical thought is crucial to any branch of science and engineering. At Washington University, where annual research support amounts to nearly \$60 million and graduating classes are heavily science-oriented, the point is underscored by the fact that last year more than 3,500 undergraduate students were enrolled in classes taught by the department of mathematics. This figure includes more freshmen than many departments see students in an entire year.

Beyond the routine channeling of students through first- and second-year calculus, though, something larger is happening. Washington University's Department of Mathematics has quietly moved to prominence as a nationally and internationally recognized body. Two of its students in the last four years have been named Rhodes Scholars. Steve Lockhart, a 1977 graduate, is now a second-year student at Oxford. Adam Helfer, who graduated in December with a degree in physics and mathematics, will attend Oxford in the fall. The department recently has attracted graduate students from nearly a dozen countries in Europe, Africa, the Mid-East, Asia, and the South Pacific, and a liberal share of undergraduate prodigies, who skip high school classes and enter the University at a level with

upperclassmen. In 1978 the William Lowell Putnam Competition, the most prestigious college mathematics contest in the United States and Canada, was won by a Washington University student team (coached by Edward Wilson, mathematics, and Carl Bender, physics) and similar University's teams placed second in both the previous and following year. Each time the WU students bested the likes of Princeton, Massachusetts Institute of Technology, Harvard, and the University of California.

THE REAL PUSH for such excellence began some twenty years ago when the entire University was engaged in making its transformation from a "streetcar" college with 85 percent local students to a nationally recognized institution. Dormitories were being built at the southwestern edge of campus and departments were diversifying and recruiting new talent. The department of mathematics began building on a nucleus of well-known mathematicians, including James Jenkins, Franklin Haimo, William Boothby, Edward Nussbaum, and Isidore Hirschman, Jr.

At the same time, mathematical research, like other scientific disciplines, was growing rapidly in the years after World War II. During that period, the United States joined France and the Soviet Union as the top triad of mathematical powers and the American Mathematical Society's annual *Mathematical Reviews* grew from one inch-thick volume in 1941 to quarterly four-inch volumes by 1956.

Hirschman, now retired, eventually became department chairman and is considered a prime mover in building the department's reputation. The addition of Guido Weiss, who met Hirschman at an international conference in Scotland in the late 1950s, served as a catalyst, attracting other new faculty. The department has been growing in excellence ever since.

Dramatic evidence of the stature of the faculty and their research was provided in 1978 when Washington University faculty, alumni, and associates outnumbered participants from any other single institution at the 1978 American Mathematics Society's Summer Institute at Williams College, Williamstown, Massachusetts. The most important mathematics society, the AMS is most closely associated with research. Its summer institutes are annual events sponsored by the National Science Foundation.

Through conferences such as these, guest appointments, visiting professors, and the publishing of books and papers, the University mathematics department has joined an international network of mathematical research. Says Robert McDowell, who is serving his fifth year as department chairman, "We have a lot of overseas connections. We're a magnet for people in certain fields."

Most recently that magnetism seems to have taken effect on Peking (Beijing) University in the People's Republic of China. This fall, Qian Min-ping, a mathematician of sixteen

Number

*The Kingdom of Number is all boundaries
Which may be beautiful and must be true;
To ask if it is big or small proclaims one
The sort of lover who should stick to faces.
"Numbers and Faces"
W. H. Auden
(Courtesy Random House, Inc.)*

By Jill Murray

years' experience at Peking University, was chosen by her department heads to study in the United States. Intrigued by books and papers she had read by WU Professor Martin Silverstein, she chose to work with him as a visiting scholar.

Before the end of the fall semester, plans were made for a second mathematician from Peking University to join the University's mathematics department in February to work with Weiss, who has accepted an invitation to lecture in Peking next fall. Scholars there are preparing for his visit by reading his books and papers.

Long before mainland China opened its doors to the West, a pattern of foreign faculty exchanges had been established. In recent years, department faculty have taught or addressed conferences throughout Eastern and Western Europe, in the Soviet Union, Japan, India, and South America.

CATALOGING the department's accomplishments is one thing; explaining the mathematical strengths is another. To those uninitiated in the mysteries of harmonic analysis and function theory, even simplistic definitions are difficult.

"It's a little like someone who has just learned a few letters of the alphabet asking Tolstoy, 'Exactly just what is it that you do with these letters?'" offers McDowell.

The walls of the chairman's office at 204 Cupples I are lined with shelves seven-high supporting volumes such as *Finite Markov Chains*, *Fortran for Humans*, and *Regular Polytopes*.

For those who don't know a regular polytope from an irregular, or who find Fortran more alien than human, McDowell and his colleagues describe their work in rough analogies.

McDowell's own specialty is topology, a kind of "rubberized" geometry studying those aspects of geometrical figures that are not changed when the figure is distorted. As an example, he suggests a triangle is topologically equivalent to a circle because one can be stretched into the other. The four-color problem, which states that it is possible to color any map with four colors so that no two countries of the same color touch is also topological in nature, because the relationship between the countries is not changed by stretching. Practical applications in this area have been found in such tasks as designing electrical networks of wires.

While certain hypothetical situations have led to technological applications, other areas of mathematical research are simply puzzles whose usefulness may be a long way off. That phenomenon doesn't bother most mathematicians, who consider their work a search for truths in unchanging relationships and natural laws.

"It's not at all inconceivable that something I do may be used for some practical purpose, but that's not the reason I'm

doing it," explains McDowell. "I guess it's an expression of creativity, the desire to know what really is. You get deeper and deeper into it, and of course, the answer gets farther and farther removed. A novelist probably feels the same way."

Albert Baernstein II, a professor with the department since 1972, puts it another way: "It's *fun*." Concise and good-natured, he returned to school for an advanced mathematics degree after a year-long stint as a cost analyst at Prudential Insurance Company in New Jersey. During that period, in which he logged many hours adding and re-adding columns of figures, he quips that the most productive thing in his life was the conception of his daughter, Prudence.

Today, Baernstein's work is considerably more complicated. He specializes in complex variables, as does his sometime-partner, Richard Rochberg. Rochberg joined the department two years earlier after finishing his education at Harvard and working a brief time at the Institute for the Future, a group of former Rand Corporation employees engaged in long-range social and technological forecasting.

In friendly banter, the two begin with a conundrum which illustrates the kinds of questions arising in their research: A drunk is stumbling toward a winding river which in some places is dangerously close to him and in others is farther away. How long is it likely to be before he falls into the water?

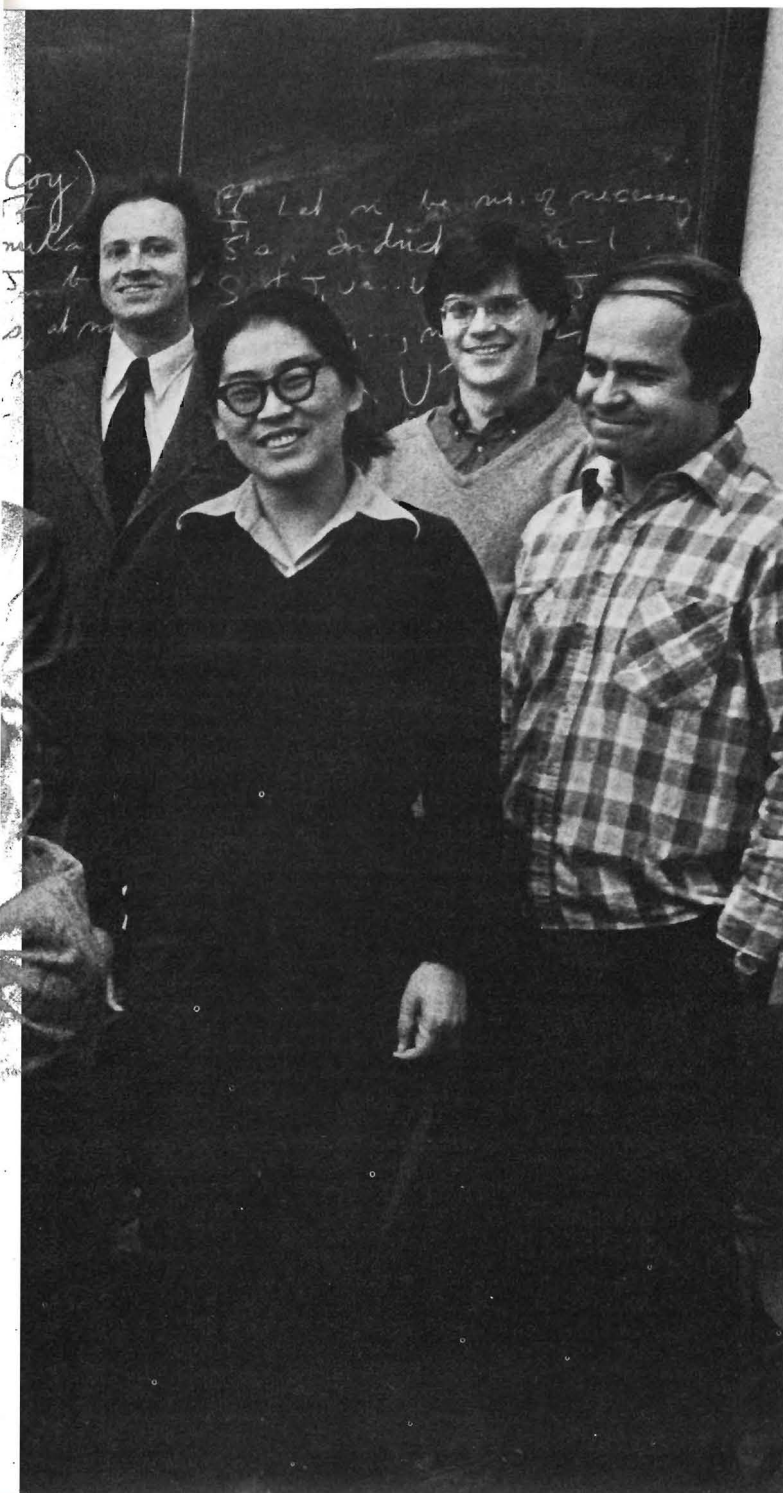
In a different framework, the same problem asks how to find the temperature on the distorted rim of a hotplate given the temperature at the center, by calculating the outward movement of heated electrons. Both problems are closely related to probability, Rochberg points out, noting that this analytic technique is applicable to fluid flow problems such as water flow around barriers and air flow around airplane wings, as well as to drunks and hotplates.

ALTHOUGH CONNECTIONS like these are easily seen in hindsight, history shows that the application of hypothetical puzzles and abstract mathematical relationships to technology may take years. According to Weiss, an Italian-born professor who studied at the University of Chicago before joining the University faculty in 1961, "The effect of today's mathematical research is not yet felt by the common man."

Tall and stocky, dressed in denim jeans and a vest, with rolled-up shirt sleeves, Weiss looks more like a football coach or lumberjack than an internationally recognized mathematician who has taught in Buenos Aires, Paris, Geneva, and Perugia (Italy). In 1967 he won the distinguished Chauvenet Prize awarded by the board of governors of the Mathematical Association of America for the most noteworthy expository paper published in English. Weiss's selection was particularly fitting



Faculty of the Mathematics Department: (back row, from left) Jun-Ichi Hanno, Richard Rochberg, Cleon Yohe, James Jenkins, Ronald Freiwald, Edward Wilson, Edward Spitznagel, Gregory Morrow, (middle row, from left) William Boothby, Guido Weiss, Robert McDowell, Albert Baernstein, David Wright, Franklin Haimo, Qian Min-ping, Martin Silverstein, (front row, from left) Lawrence Conlon, Gary Jensen, and A. Edward Nussbaum. Not pictured are Mitchell Taibleson, I. I. Hirschman, R. R. Coifman, Jack Shapiro, Jeffrey Mandula, and Adam Koranyi.



since the prize was established in 1925 in honor of William Chauvenet, mathematician, astronomer, second chancellor of Washington University, and founder of its mathematics department.

Weiss's prize-winning paper was on harmonic analysis, his specialty. This topic concerns the effect of the oscillation of trigonometric functions, a phenomenon that can be used to describe the constant frequency of a violin string when plucked from a particular point. Acoustics is a physical problem related to harmonic analysis.

But it is impossible—and in the end, unnecessary—to predict which mathematical inquiries will become useful. Weiss says: "Inevitably, some of this math filters out and becomes applicable. A mathematician does not worry so much about it. He is more concerned with finding the truth. Without this freedom to do basic research, I don't think science progresses.

"Perhaps some of the flavor of pure mathematics can be conveyed by considering an old conjecture about prime numbers (those numbers which can be divided evenly only by themselves and 1): for example, 2, 3, 5, 7, 11, 13, 17. Although primes become progressively rarer as the numbers get larger, a proof attributed to Euclid shows that they do continue to occur indefinitely. The question, not yet answered, is whether twin primes (3,5), (5,7), (11,13), (17,19)—those pairs separated by only one number—go on forever. It is a tantalizing problem for mathematicians, and even though it seems the solution would have no practical application, mathematics can be surprising. It was, after all, the introduction of the concept of the square root of minus one which led to the theory of functions, and ultimately contributed to the invention of the radio."

WHEN NOT TEACHING, most department faculty members are engaged in such basic inquiries, often funded by the National Science Foundation. Some of the faculty, though, do venture into other areas such as theoretical physics and medical statistics. Statistical models were once the speciality of department member Mitchell Taibleson. Although his work now centers on harmonic analysis, Taibleson first joined the University as a research professor of mathematics in the department of psychiatry. His involvement in this area has since tapered off, but he still holds that appointment.

"The problem of developing mathematical models for the behavioral sciences is twofold," he says. "There are people who say you can't do it, and there are people who do it, but in a very bad manner." According to Taibleson, "Mathematics is not a reality—it is a way to test beliefs."

In one project, Taibleson helped streamline a series of branching questions for the diagnosis of alcoholism and Briquet's syndrome, a multisymptomatic hysteria which most often affects

middle-aged females. By carefully selecting the order, a “tree” of diagnostic questions for these two illnesses was reduced to less than half its former size.

SOMEWHAT ALONG the same lines, his proudest accomplishment was publishing a paper which showed a certain theorem could be proved in one half page of steps as opposed to the standard 10 to 20 pages. In a word, he had turned an awkward proof into an elegant one.

“When a mathematician looks for elegance, he’s looking for something which allows him to go as gently as possible from the definition to the conclusion,” notes Taibleson.

“Primarily, mathematicians are interested in counting, measuring, and relationships between things—simple, ordinary problems—but at very high levels of abstractions. The difficulty lies in unpacking the abstraction. Several layers down, you finally get to the problem you’re really interested in.”

Edward Spitznagel, Jr., who joined the department in 1969, started in classical mathematics but grew impatient. “I thought being a mathematician would be a good way to busybody my way around all the scientific disciplines,” he recalls. Spitznagel has, in fact, busybodied himself into several areas of medicine through the study of statistics and probability modeling. Working with researchers at the School of Medicine, he has helped interpret statistics and organize data on a variety of projects including anesthesiology, psychiatry, genetics, and plastic surgery. “You’ll find there is practically no certainty in medicine,” Spitznagel says. “If you feed a group of rats red dye No. 2, they won’t all get cancer.” Often, the statistics must determine the crucial point at which seeming randomness becomes a significant probability.

One of Spitznagel’s most recent projects has been setting up a data base on surgical anesthesia. He has organized data on more than 50,000 cases at the University’s Medical Center, noting race, sex, age, preoperative condition, and surgical details. This information system, believed to be one of only two in the nation, enables doctors to predict the length of a patient’s hospital stay more accurately.

Spitznagel is currently working on a genetic modeling program to help medical researchers determine which diseases have hereditary factors, a completely wide-open question today. He says, “We ask, for example, whether high blood pressure is caused by a single gene or common stock or both. We’re studying the evolutionary change for that phenomenon under both conditions.” Models can be discrete or continuous. The discrete model, he explains, is to imagine everyone gathering together and mating at the same time. The percentage of the phenomenon occurring for one generation can then be calculated simultaneously. A continuous model is more complicated, but also more realistic.

Jeffrey Mandula is another mathematician who appreciates the difference between theoretical approximations and real-life situations. A newcomer to the University, he straddles two departments, mathematics and physics, with a joint appointment—a position he finds “very congenial.” Mandula left a teaching position in applied mathematics at the Massachusetts Institute of Technology last year and now keeps two offices, one in Cupples Hall I and another in Compton Hall. His research is aimed toward understanding the properties of quarks and gluons, the most elementary of particles in an area of theoretical physics called quantum chromodynamics. He refers to it as “the soul of matter.”

“I like to be working closely with my colleagues down the hall, whatever hall that might be,” Mandula concludes. Some find that situation not only congenial, but necessary.

“If you don’t talk to someone who understands these things, you go crazy,” Rochberg says. Disk algebra, holomorphic functions, and Toeplitz operators are not exactly conversational topics among the general public.

“It’s a friendly department,” continues Baernstein. “One of our main strengths is that we interlock.”

BY NATURE, mathematical research is a solitary undertaking, but the department’s twenty-two faculty members influence each other through informal, biweekly seminars, and frequent discussions. Sometimes, one mathematician will work at a chalkboard while another works on paper at a desk, with both periodically calling out their procedures and results. In this manner, they put together their calculations and fill in the gaps.

“A mathematical proof becomes that which is convincing,” explains Taibleson. “You can’t possibly put in all the reasoning between the steps. In this act of communication, mathematics is a very social discipline.” In a field where the research laboratory is in the minds of the researchers, any closer teamwork is unlikely.

But research is not the sole activity in the department of mathematics. According to McDowell, the mathematics faculty teaches 50 percent more student-hours than the next busiest teaching department. “Teaching is an important fact of our life,” he emphasizes. “We have 1,200 students this semester in calculus alone.”

In the present academic year, the department’s twenty-two faculty members are teaching thirty-five undergraduate and sixteen graduate courses. Chairman McDowell points out that despite the specialization of their research, each faculty member is expected to maintain a “repertory” which covers all undergraduate and most graduate courses. In addition, he says, the

mathematics faculty participates to an unusually large extent in University-wide activities.

The faculty also occasionally dips into less technical fare through special general studies courses. To encourage the habit of thinking quantitatively, McDowell developed a course several years ago entitled *You Figure It Out*. No knowledge of geometry, calculus, or vector analysis was required. Instead, students were asked to use their own high school mathematical background and a healthy dose of common sense. "The first step in mathematical independence is to show students how much they can do with the mathematics they already know," McDowell says. The *Nature of Number*, a similar course taught by Taibleson, used the daily newspaper as a basic text.

One of the most intriguing general studies courses ever offered was taught by a professor of mathematics, Cleon Yohe. Entitled *Communication with Extra-Terrestrial Intelligence*, the course spanned a wide range of disciplines from astrophysics to theology. According to Yohe, the mathematical odds that intelligent life exists elsewhere in the galaxy are impressive. Other interdisciplinary general studies courses have been taught by mathematics professors Ronald Freiwald and Jack Shapiro.

SOME MATHEMATICIANS believe a thorough knowledge of odds gives a special down-to-earth style to their lives. "It does give you a certain philosophical viewpoint," says Weiss. "I believe I'm much more skeptical than most people, because in mathematical analysis, many simple phrases have no real meaning." He recalls a famous paradox to prove his point: A barber will shave every man in a city who does not shave himself and only those men. Who, then, shaves the barber? "This seems like a reasonable question but try to answer," he concludes.

Spitznagel offers a further explanation, "I think my skepticism did not come so much from my mathematical research as my work as a statistician doing probability theory. At that point, I really became immune to gambling."

He admits, though, to a certain gambling with nature in his love of mountain climbing. His less active and more exotic hobby is origami, the Japanese art of paper-folding, which can yield intricate paper figures with a perfect two-fold symmetry, both from front and side views.

Other pastimes of University mathematicians run the gamut from tennis and skiing to music, although in this area some members are particularly active. Several play piano or recorder, one is a former student of voice, and another sings with an award-winning barbershop quartet. Contrary to popular belief, most mathematics professors deny any particular fascination with games. "People don't extend their professions into their outside lives," Weiss explains. And while they may consider themselves

seasoned skeptics, most are honest enough to disclaim any powers of super-rationality. Neither do they maintain that all things can be explained quantitatively.

In the mid-sixties, while he was director of the Committee on the Undergraduate Program in Mathematics of the Mathematical Association of America, McDowell organized and directed some forty national meetings on undergraduate mathematics. Since then, he has participated in United States delegations to several international conferences on mathematics education in the Soviet Union, the Netherlands, Japan, and India.

Yet McDowell still finds time to participate in such University events as two *Alice in Wonderland* evenings held on campus in January 1979. Together with William Gass, WU professor of philosophy, McDowell presented a sampling of the mathematical puzzles and verbal enigmas that fascinated Dodgson—alias Carroll—throughout his life.

SOME MATHEMATICAL theories have changed since Dodgson's day. Many more had changed over the previous centuries. In the days of Pythagoras, for example, mathematicians regarded all even numbers as feminine, soluble, and ephemeral, and odd numbers as masculine, indissoluble, and of a celestial rather than an earthly nature. Still, the Pythagorean Theorem about the right-angle triangle holds true today.

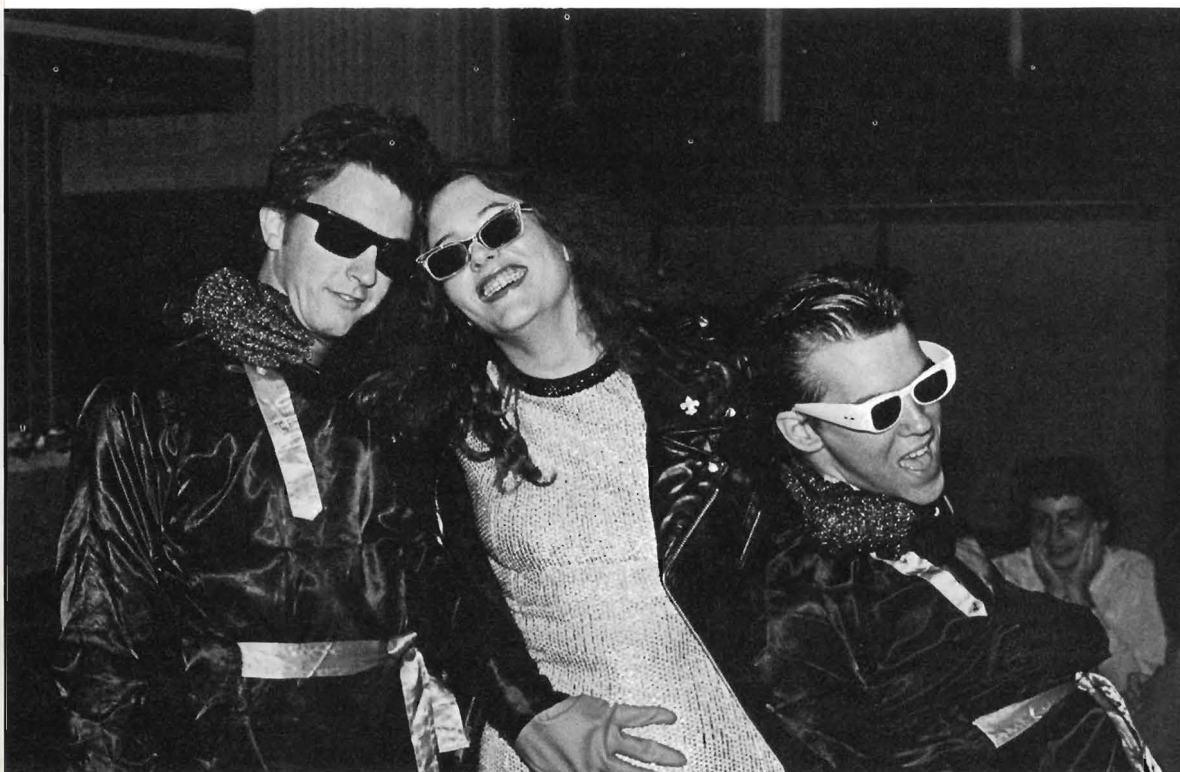
Mathematicians today, as then, continue to try to answer questions nobody remembers having asked. As mathematicians point out, that is an ability computers can never replace, even as painting by numbers can never replace art. "Mathematics is a living thing," says Weiss.

So saying, he settles at his desk. Behind him is a wall-sized chalkboard covered with the scrawlings of calculations and equations and odd numerical ramblings. In the upper corner is the stern warning, "Do Not Erase."

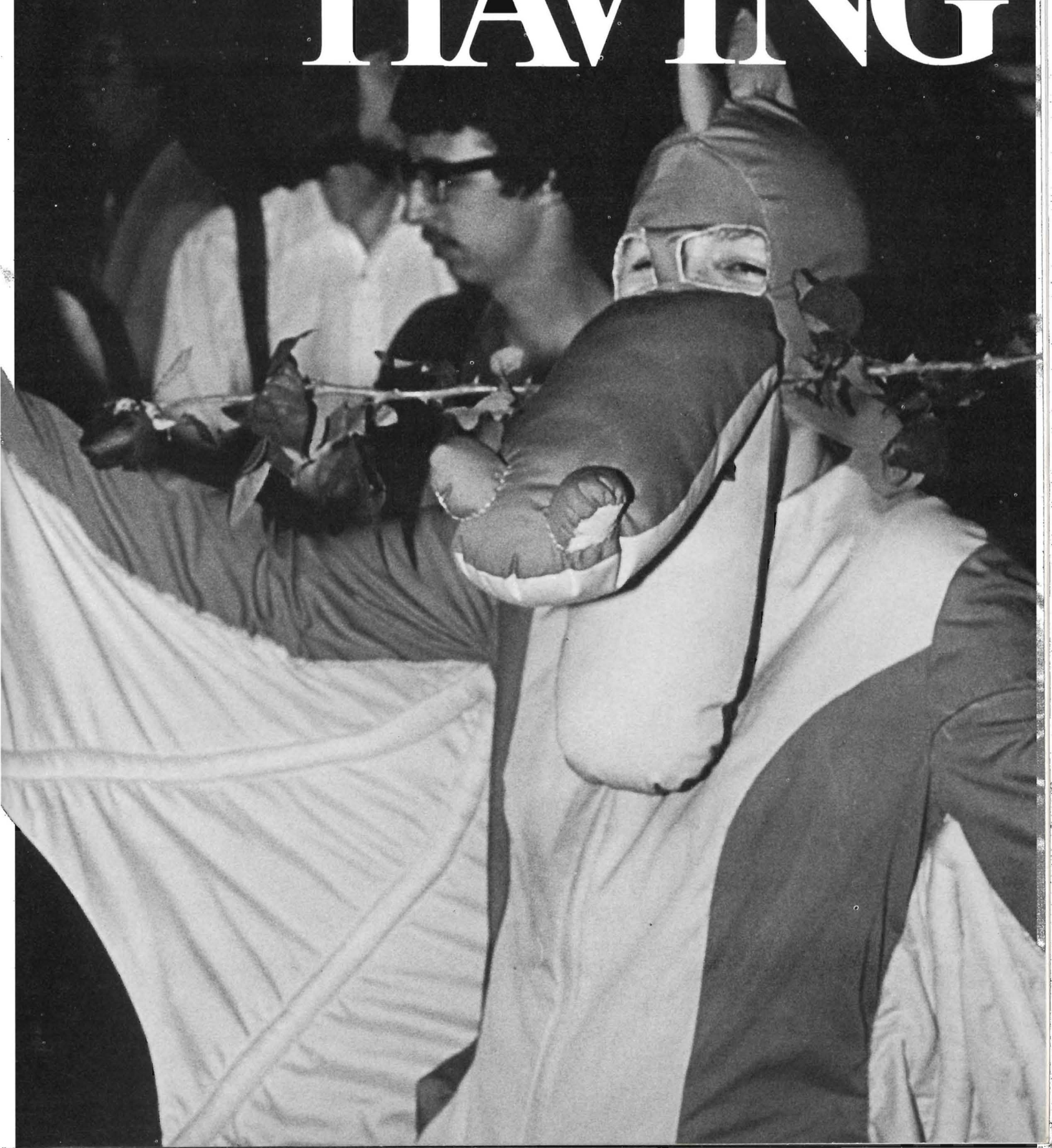


Last fall the costume ball returned full force to Washington University's campus. For the celebration of its one hundredth anniversary, the School of Fine Arts revived both the Beaux Arts Ball (for students) and the Bohemian Brawl (open to all-students, faculty, and alumni). These were preceded by the all-University Red Rose Cotillion, begun some five years ago as the campus's first reprise of the all-school dance.

Obviously everyone was. . . .

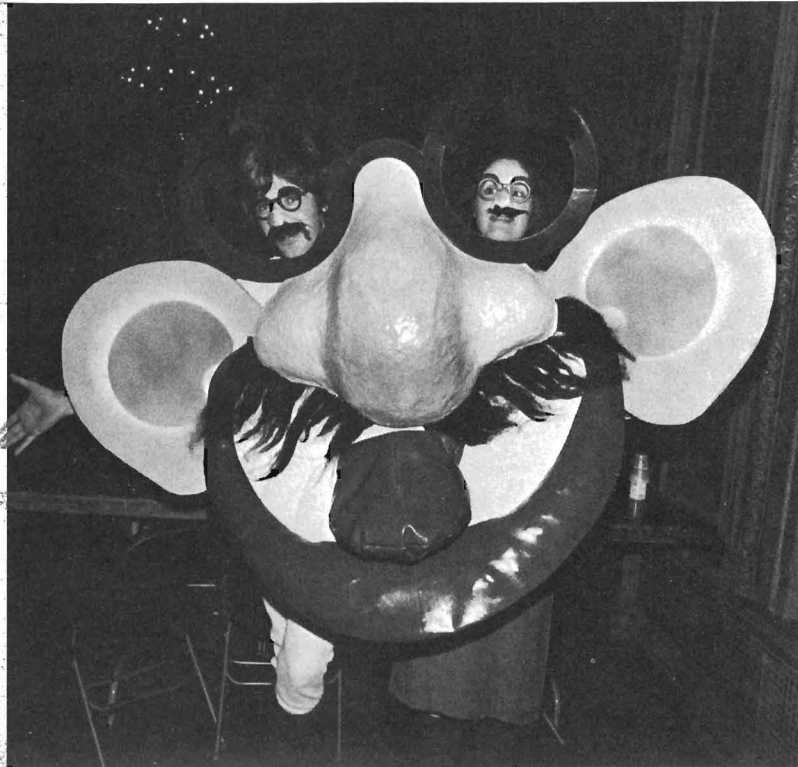


HAVING



A BALL





Modern Religion: Diversity, Freedom and Wholeness

By Martin Marty

Martin E. Marty is the Fairfax M. Cone Distinguished Service Professor at The University of Chicago, associate editor of The Christian Century, and author of many books including A Nation of Behavers.

He spoke at Graham Chapel last fall as part of a Jewish, Protestant, Catholic trilogy presented by an interreligious student group called CIRCUit.

TWO SCHOOLS of interpretation vie in the field of religion. One set of scholars speaks only of "secularization," a process by which religion dwindles, to be replaced by science, technology, and practical ways of life that rule out the gods. The other tends to agree that religion has yielded to other forces, but is not so ready to admit that there is less religion around than there was in ages past. Most of the observers in this camp speak of "modernization," a process by which religion is relocated, not rejected.

The difference between these two schools of "-ations" is clear in a rather crude image that I have often used. Picture religious expression as a kind of substance that fills a balloon. The secularization people believe the balloon is leaking, if it has not popped. Each time one looks, there is less of the substance left; in the eyes of some, it has disappeared: "God is dead." The modernization school has a different process in mind. Take a balloon without leaks, tie shut its opening, and press a hand with fingers spread down on it. The balloon must rearrange itself between the fingers. Or take a grid, like

a piece of fencing, and press it lightly; the balloon will reshape itself.

Both pictures have one unfortunate aspect: they create the impression that religion is only acted upon. In the age of the Ayatollahs on one hand and the Mother Teresas on the other, it is clear also that religion acts, that it shapes. But for present purposes we shall concentrate on religion as a response, not as an instrument of aggression for good or for ill.

The modernization process, for which there are many names, is the interpretation of religious change that I favor, although, of course, we are also secular. My colleague Langdon Gilkey says that we are to the secular outlook as the Greeks were to Hellenism. Before we do anything else (and unless we do anything else) we are likely to think of most of the operative and practical dimensions of life without reference to transcendence or unseen beings. We seem surprised when a literary or artistic person is overtly religious, and we are suspicious when a politician is. When religion works its way back into the academy, we expect an uphill push. But in the passionate sides of life, where we seek mean-



ings in a universe we did not choose to inhabit but must make sense of, most of us are religious. The polls confirm what our hearts' reasons already sensed.

THE TECHNICAL terms for what happened to produce the modernization of this passional side of life are long, difficult, and not part of the linguistic coin of the realm. Sociologists speak of "differentiation," and historians of "voluntaryism" (with the "y" intact). At the risk of com-

municating so easily that I might appear to be leaving something out or endangering my academic credentials, let me say that the two central processes in modernity for religion are that it "chops up" life and it forces or allows "choice." To the degree that life and meaning do not come to us as an integral package deal, a whole that ministers to us in our wholeness, to that degree we are moderns. And to the degree that we are impelled or free to choose between world-views or meaning-

systems, to that degree we are moderns.

IT IS NOT a wholly novel situation. The Greco-Roman world, for example, was full of sects and cults, from the obligatory *Romanita*, which exacted a pinch of incense for the emperor, to devotional groups dedicated to the Earth Mother, the Grand Cybele, Diana of the many breasts, Judaism, or one of its more pesky sects, Christianity. Primitive and archaic peoples may have "chopped up" life more than we now imagine, into zones of the sacred and the secular, the above and the below, the eternal and the temporal. But more than nostalgia calls us to picture most people living before the last two or three centuries as inhabiting a world that came to them more as a whole and in the whole. They grew up in a valley or a town where they would never meet someone who was not, say, Christian or Muslim. Religion covered all of their life; they did not separate church and state, nor did they sever ethnicity from religion or religion from state as we tend to do.

The processes of chopping up and offering or imposing choice were long in developing. As its critics like to point out when they compare it negatively to the codes of, say, Native Americans, the Bible set in motion the trend toward differentiating, dividing labor, separating the true God from the gods and the non-gods, toward setting aside certain sa-

cred days and letting the others seem less significant. The Greco-Roman world, to which I already referred, was succeeded by the Renaissance and the Enlightenment, in which much more was granted to human decision and in which humans came to be ever more autonomous. Religion became a pick-and-choose process, and moderns could select their outlooks more or less *a la carte*. But it is the post-Enlightenment world, the age of revolutions both political and intellectual, that produced the ever more chopped-up and full-of-choice world that we in our corners of the globe take more or less for granted.

AS WITH the process, so with the namers of the process: the center was in northwest Europe and Anglo-America. The namers carry names like Max Weber, Karl Marx, Emile Durkheim, Talcott Parsons, and, in our time, Peter Berger, Robert Bellah, or Thomas Luckmann. They may not all be household words for the prime-time audience, but they have had enormous influence in the back rooms where people monitor spiritual change.

Most of these analysts—Marx being a partial exception—begin by observing that there is an awful lot of religion around. Talcott Parsons put it more intelligibly than Parsons often put things when he watched the human in culture, which means all of us. Such a human cannot tolerate a world in which everything

“just happens.” He or she must endow the fortunes and misfortunes, the joys and sorrows of life with meaning. Sacred symbols, myths, rites, and texts come to the rescue. The students of secularization mistook change in the symbols, or in modes of attachment to symbols, for their disappearance.

Not so. As British sociologist David Martin pointed out, each century has its own means of overlooking the process of religious change. In the eighteenth century, rational Enlightenment beings assumed that the growth of reason would mean the decline of faith and cult—and then called for faith *in* reason and formed cults of Enlightenment. In the nineteenth century, social prophets assumed that the growth of social existence would mean the death of the gods. Yet they formed social forces or projected messianic views of history that also exacted ultimate concern and evoked faith. In the twentieth century, the theatre of the absurd, which most of us inhabit part of the time, assumed that as the absurdity of the universe became clear, people would reject the religious rites and symbols. Instead, existentialist philosophers kept converting to faith, and people, condemned to meaning, continue to find meaning in faiths old and new, terrifying and saving.

THE DECADE just passed has shown the vitality and sometimes the threat of religion. The Ayatollah, Muslim-versus-Jew, Billy

Graham, the hare krishna people at the airport, Jonestown, the Pope, Gallup opinion polls, a born-again president, the growth of fundamentalism, the flourishing of therapeutic religious groups, interest in Jewish mysticism—these are only a few of the obvious signals. But they confuse us, since each of them creates for its followers or fellow-adherents a separate “life-world,” so that meanings do not match. We pass people in the streets never expecting anyone to share our ultimate concern. And we feel ourselves chopped up, so that one set of meanings applies to our practical lives and another applies when we fear death or celebrate birth.

Many of the religious forces see themselves as demodernizing, dedifferentiating, devoluntaryizing—pardon me for three barbarisms in one sentence!—because by enormous control of choice and destiny they would lead people back to wholeness. Most Sinologists see Maoism as such an effort, one whose single canonical text and whose single licit ideology was to make the Chinese people whole, or each Chinese person whole. The Shi’ite Muslims in Iran are overtly engaged in a sometimes pathetic, sometimes ruthless effort to repeal modernity, since so many people in that unhappy land were simply overwhelmed by the new forces. They felt only the negative side of processes that in our part of the world had positive and compensatory aspects.

SO MODERNITY chops up and severs. So does modern religion. Yves Congar thinks that the medieval university turned modern when Catholics distinguished between dogmatic and moral theology. But they had not seen anything yet. Soon the universities were severing physics and philosophy from theology, and seeing the disciplines as competitive, not complementary. And today there is a religion of the academy and of the sanctuary, a religion for positive action or negative aggression, a religion of spirituality and a religion of activism. The specialists do not understand each other. A Paul Tillich, a Billy Graham, and an Ayatollah, though all religious leaders, probably have little in common over dinner.

People feel the results of the chopping up and, in free worlds, choosing processes in many ways. Religion becomes a private affair, which touches only some dimensions of life. “I happen to be a Jew.” “Go to the church of your choice.” “I don’t mix politics and religion.” “God is for Sabbath or Sunday. Then there are the other six days.” “You must decide—for Christ.” “Don’t be half-safe; go charismatic and be a *real* Catholic.” You can add your own perceptions to the list; many of them will come from bumper stickers.

Most of us accept modernity as a mixed bag. Certainly, some of its elements come to us as a gift. Few of us would welcome coerced religion or imposed philosophies of life. We pay a high price for choice,

but we want choice. Yet the negative side is there, too. Historian Peter Gay, when discussing culture in Weimar, Germany, became the great diagnostician of what he called “hunger for wholeness.” Many successful leaders of cults and sects create the impression that they are offering wholeness again. Trust the master. Join the family. Don’t feel the need to do your own thinking. Let us short-circuit you and start you over after you overload. Ours is the “one way.” Be people of one book. Don’t confuse your mind with learning. Let us put borders around ourselves and distance between ourselves and others. Within the consequent huddles people do get the impression of wholeness, though from an eighth of an inch away they often look very much reactive to “chopped-upness,” and hardly become models for a fulfilled and healthy humanity.

The thoroughly modern Millies and Marvins, on the other hand, accept and embrace modernity and outdo each other in the cafeteria lines of faiths. They are “into” something or other, the “into” signalling intensity without commitment or duration. This year singer Bob Dylan is into Jesus; last year he was into Judaism; a decade ago he was into social protest. Next decade he may be into being a cowboy. We take a dab of remembered Catholicism, the Methodism picked up from an ex-mate, the yoga that came with exercise at the “Y,” the left-over Judaism in the Buber we read in college, the

astrology that just “may have something to say” in the daily horoscope, and add a dash of macrobiotics and faith in running, and manufacture a world view shared by no one in the next apartment or our own.

IF MY TONE sounds derisive, it is directed not at the victims but the peddlers, those who create the illusion that there is a simple way to escape modernity or to be whole while wallowing in it. The victims demand empathy, not the voice of the satirist. Unministered to, many moderns fall under coercive religious leadership, in the form of political totalitarians or religious totalists, who impose unity and remove choice. Between the spectre of totalism and the drift toward aloneness and isolation into separate “life-worlds,” there are ranges of choice. (Even as I turn toward therapy, the modern side shows in the choice of the term “choice”!)

Edmund Burke spoke of “little platoons” that help people between Leviathan and pure autonomy and isolation. Peter Berger speaks of “mediating structures.” We can see people regather into tribes that are not always self-enclosed. The search for roots is an attempt to link up with long-term values, for we get our values more from tribe than family. Sensitive people call for the rebuilding of neighborhood, attentiveness to parish or cell or movement, concern over boundaries and identity so that we can trust each other.

But as the tribes regather, it is important that they remain mediators between self and the whole of society. A Dutch Calvinist political thinker of yore, Johannes Althusius, spoke of society or a public order as *communitas communitatum*, a community of interacting sub-communities, of people and forces that he called *symploites* who acted symbiotically on each other. Such a model has attractions in a time when we minister to the “hunger for wholeness.” Those who accept it seek but are never overwhelmed by consensus. They are more likely to find places where their life-worlds overlap with those of others, where they can interact. They find a language of discourse which improves argument in a free society, which keeps America from being a Lebanon or a northern Ireland, which helps it become a civil society. For some this means resort to natural law or natural reason, to more dimensions of Enlightenment thought or biblical faith than the sects in the university or the world of religion often propagate.

I was invited to Washington University in a sequence of speakers on the religious heritage of the West, and was to represent—with no backing of hierarchy or legislative bodies—Protestant Christianity. To do so as a meaning-seeker who finds some measure of wholeness in the life of the church and who is fully a modern in the university, means for me to reach into a particular meaning-system to

show how one is poised.

PROTESTANTS were great agents of modernization. They helped separate church and state, though many were dragged screaming into the era of separation. They differentiated between laity and clergy and gave laity more power. They chopped up life by allowing, however, grudgingly and tardily, for many competing and voluntary sects. They helped invent the awakenings and revivals which promote voluntary conversions. From them came most of the interpreters of religious modernity.

In their repertory of symbols, however, they do not lack those which point to the whole. Their biblical view of creation connects their religious faith to the power of a Lord of history, one Lord, who is active in and beyond Israel, in and beyond the circle of believers. Their original writings call believers not to a sectarian and chopped up view of reality but (in Colossians 1, I Corinthians 3, II Corinthians 5, etc.) to one that sees all things “cohering” in Jesus Christ, with a new order already here. In evangelism one propagates these notions to force others to choose. In the university one outlines these in order to make people aware of the symbols of wholeness that minister to Protestant Christians, though not to them alone. By the very rules of the academic game, they come as options and not as injunctions, as illustrations which people of other commitment can match.

Protestants today join others in their need to recover more of wholeness. They do so by efforts to live more in harmony with nature, with less impulse to dominate and “chop it up.” They have an ecumenical tendency, to see the positive in world religions and in other forms of Christianity than their own. Some of them try to rise above the world of competitive bumper stickers to a language of common discourse in the civil realm. They offer models of wholeness from their own camp: the Dietrich Bonhoeffers and Martin Luther Kings, people who were rooted in a particular tradition but could embrace others.

Such people know that they are pilgrims of eternity, who will not find and who may not want every aspect of wholeness in a time of totalitarian removal of choice and imposition of ideology. They join other people of good will in lining up against the enemies of wholeness in their own camp and against aggressive purveyors of totalist outlooks. They live in a broken world, but are cheered by signs of *shalom*, of a peace that passes understanding, signals that break in and keep them from being merely overwhelmed or shattered. Some of them, despite everything, are quite fulfilled and (dare we say it?) happy. They helped produce the mixed blessings of modernity and now need company in their efforts to overcome its worst effects.

The Federal Reserve and Inflation

By Lawrence K. Roos

This article is based upon a speech entitled, "The Fed's New Monetary Policy," by Lawrence K. Roos, president of the Federal Reserve Bank of St. Louis. He spoke to the Business School Century Club.

IN THESE few pages, I would like to discuss what we at the Federal Reserve Bank of St. Louis believe is the most effective way to deal with inflation. In so doing, I shall attempt to make three points:

That the underlying cause of inflation is not high wages, exorbitant prices, or rising energy costs, but rather excessive growth of the nation's money supply;

That inflation can be reduced by the gradual reduction of the rate of monetary expansion; and

That the Federal Reserve's new policy procedures, announced October 6, 1979, offer—if given time to work—the best prospect for bringing an end to our nation's number one problem, inflation.

Just as a doctor can most effectively treat an illness by identifying its probable causes, so policymakers can deal most effectively with inflation only by understanding its source. The most serious obstacle to our ability to come to grips with inflation is our confusion over its causes. We have heard that it is the result of decisions of greedy businessmen to increase the price of goods and

services. We are told that the true culprit is exorbitant wage demands by organized labor. Recently a Congressional critic of the Federal Reserve System charged that high interest rates cause inflation by adding to the costs of production. High wages, high prices, and high interest rates are the *results* of inflation, not its *causes*. In times when people do not anticipate continued inflation, there is less pressure for wage and price increases and interest rates tend to decline.

Some economists and public officials, apparently refusing to recognize the inflationary consequences of excessive monetary and fiscal policy actions in the past, would like us to believe that our present predicament is essentially the result of energy price increases inspired by the Organization of Petroleum Exporting Countries (OPEC). They argue that if energy prices could somehow be stabilized, the pressures of inflation would subside. This simply is not true. Assuming that inflation, as measured by the gross national product deflator, is currently approximately nine percent, that portion which is attributable to excessive money growth is approximately seven percent. To put it somewhat differently: Had there been no oil price shocks or other nonmonetary factors, we would nevertheless still be faced with an inflation rate of seven percent, caused solely by the seven percent annual average growth of money over the last several years. The effects of higher energy prices

and other exogenous factors account for only about two percent of our present rate of inflation. For policymakers to focus primary attention on controlling oil prices or other prices and wages (via guidelines) is to err by failing to recognize the source of the problem.

EMPIRICAL evidence demonstrates that the basic rate of inflation is the direct result of excessive growth of the money supply. Money, as you know, is assets that can be easily exchanged for goods and services. In our economy this means currency and demand deposits (checking accounts) in the hands of the public. When the money supply expands more quickly than available goods and services, total demand increases, and this causes prices to rise—which is the definition of inflation.

We also know that increases in money supply have an almost immediate effect in stimulating the economy, but the resulting increase in the price level is not felt for one and a half to two years. This lag between the time people observe the stimulative effects of increased money growth and the time they experience its unpleasant inflationary consequences offers public officials an intriguing opportunity. It enables them to reap the advantages of a strong economy at election time, because the resulting inflation does not become apparent until a year or two later.

If the key to reducing infla-

tion is to reduce the rate of growth of the money supply, how do we do that? The answer lies with the Federal Reserve's Open Market Committee, which has direct responsibility for controlling the growth of the money supply. The Federal Open Market Committee consists of the seven governors of the Federal Reserve System and five of the twelve presidents of Federal Reserve district banks. The committee meets in Washington ten times a year to set goals for the growth of the monetary aggregates. Once targets are set, they are achieved through the buying and selling of government securities in the open market. When the Federal Reserve buys securities, it pays for them by crediting the bank account of the seller, thus increasing commercial bank reserves. As their reserves swell, banks are able to expand their loan volume and the supply of money increases. When the Federal Reserve sells securities, it soaks up bank reserves, loan volume contracts and the money supply shrinks.

IF WE ARE really serious about controlling inflation then, all that is necessary is that we establish a stable—and slower—rate of money growth; that we announce our monetary growth goals clearly, so that all at home and abroad will understand them; and that we conduct our open market operations in a manner that will achieve these goals. I believe that our policy objective at this time should be gradually to re-

Lawrence Roos (center) with Carl L. A. Beckers (left), BSBA 28, and Robert A. Ridgway, BSBA 63, at the Business Century Club breakfast.



duce the rate of growth of money from its present long-term annual trend rate of growth of seven percent to a rate that matches the trend rate of growth of real GNP (gross national product). This decrease, in order to minimize the prospects of recession, should be staged over a period of several years. We should announce that in the coming year, money will increase at a reduced annual rate, perhaps six percent, which would support economic expansion without creating additional inflationary pressure; the following year, five percent; the year after that, four percent; and so on until money supply growth approximates the trend rate of growth of output. We must be prepared to adhere to these targets except for adjustments that may be dictated by institutional changes or unforeseen changes in the conduct of monetary transactions; and we must resist the temptation to stimulate the economy at the expense of accelerating inflation in the future.

This recommendation is not new. For years the Federal Reserve Bank of St. Louis and others have recommended that our primary emphasis in monetary policymaking should be control of the money supply, and that we abandon the Federal Reserve's traditional practice of stabilizing short-term interest rates as the principal tool of monetary control. What was new was the announcement October 6 by Chairman Paul A. Volcker that the Federal Reserve at long last is changing its procedures to concentrate on

the control of bank reserves rather than the stabilization of the Federal funds rate (which, as the rate banks charge each other for overnight loans, is the key short-term interest rate). This represents a giant step forward and reflects a great deal of courage on the part of Chairman Volcker.

Does this mean that the day is won, that we can sit back complacently and assume the Federal Reserve's new viewpoint will carry us through to a time when inflation is no longer a problem? I wish that were the case; it is not. The Federal Reserve's new monetary policy procedure provides the means for winding inflation down, but the prospects of its success depend on many factors.

FIRST OF ALL, there is a historical bias on the part of some economists and politicians against accepting high interest rates for even a short time. This point of view is understandably echoed by those in businesses temporarily hurt by the high cost of borrowing. I do recognize that certain industries are adversely affected by what is happening. But we have no choice: If we are unwilling to tolerate higher interest rates for a short time, we will have to bear the burden of accelerating inflation—of which even higher interest rates are an inescapable consequence—and that pain will be more intense and will last much

longer than the temporary effects of the current program.

I have already alluded to the benefits strong money growth has for incumbents in stimulating economic activity at election time. I need not remind you that 1980 is an election year, and it is conceivable that political pressure for easy-money policies might surface.

THERE IS ALSO a very real possibility that the American people will expect too much too soon from the Fed's new program. That would be a great mistake: The program must be given adequate time to prove itself. Its success cannot be reasonably evaluated by watching money stock behavior over a short time span. Not even the most ardent advocates of targeting on the monetary base (currency plus bank reserves) would argue that precise money control is possible in a period of six months or less. At the very least, a one-year testing period is necessary for any valid comparison between the old approach to monetary policymaking and the new. Moreover, no one should expect inflation itself to dissipate within a few months. Inflation has built up over a period of fifteen years, and there is no way to eliminate it overnight. It would be tragic if the Federal Reserve's new approach to policymaking were to be abandoned after only a short time because of false expectations.

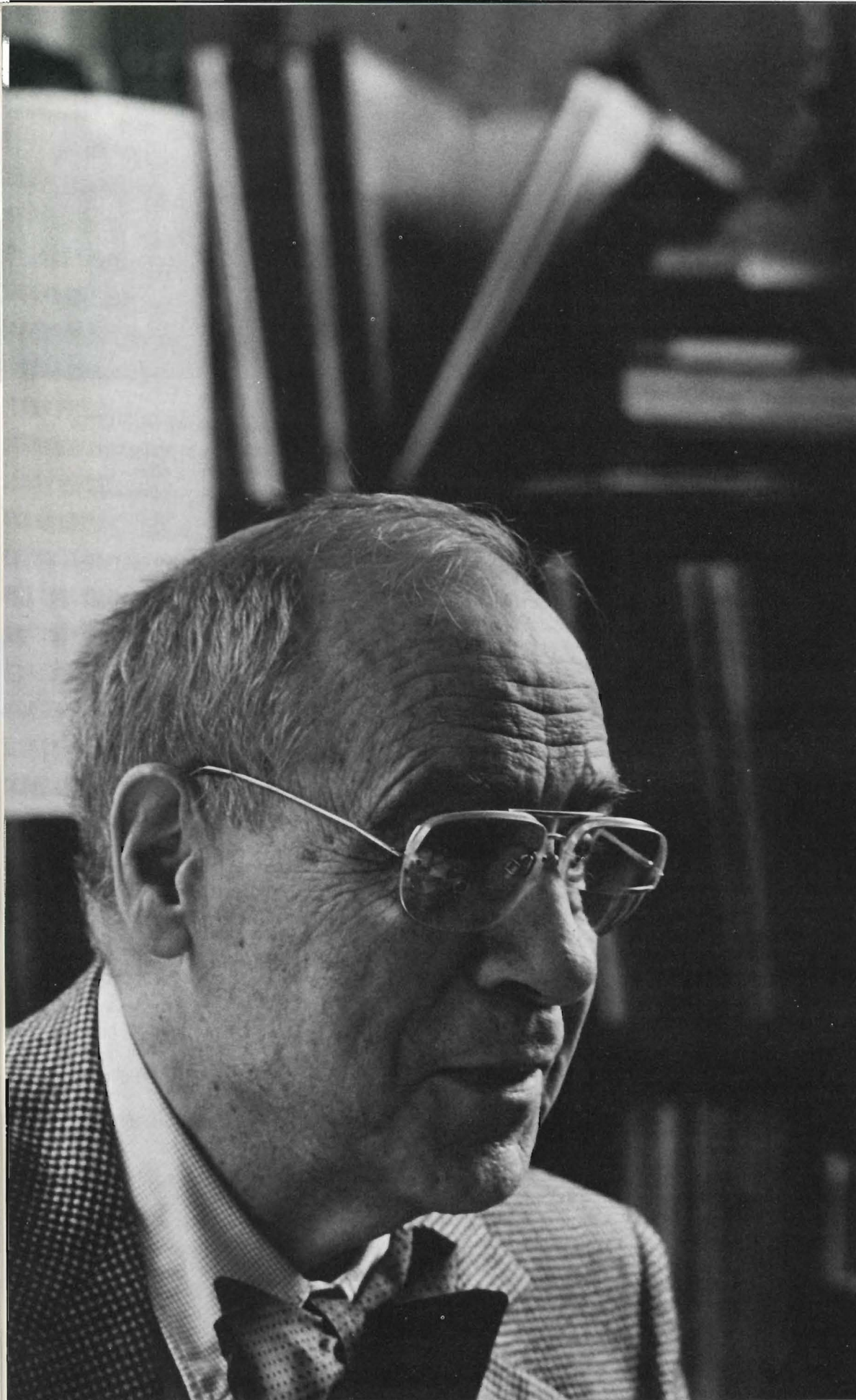
FINALLY, we must never lose sight of the fact that, to be fully effective, sound monetary policy must be accompanied by fiscal restraint, improved productivity, and a reduction in the federal regulatory burden. A lack of any one of these four ingredients makes the battle against inflation much more difficult.

I am convinced that it is in the long-term interest of all Americans that we end the monetary and fiscal binge we have been on for the past fifteen years. Only by doing so can we restore our economic stability and reestablish the trend of economic growth that has brought our nation the highest standard of living of any people in the history of the modern world.

I am reminded of Robert Frost's poem, "The Road Not Taken."

"Two roads diverged in a wood, and I . . .
I took the one less traveled by,
And that has made all the difference."

Our nation has opted to travel the road of expediency, and it has led to a cycle of inflation and recession. I believe the less traveled road—the path of monetary discipline, the careful control of the money supply, and the resistance to political expediency in the conduct of monetary policy—will serve us better in the long run.



TWICE IN THE past two decades chiefs of the manuscripts division of the Library of Congress have asked Edward Lindley Bowles, BSEE 20, to make the Library the repository of his personal and professional papers. Each time, Ed Bowles responded affirmatively, adding that he appreciates the honor that the request bestows.

But Bowles each time has also asked if the library would really want all of his papers. His early material deals with his work in the 1920s and '30s at Massachusetts Institute of Technology, where he went to study and stayed to turn the department of electrical engineering upside down, sometimes dragging it kicking into the age of electronic communication. Later papers deal with his years as expert advisor to Secretary of War Henry Stimson in which he gained the confidence of and worked as a problem solver with Stimson, General George Marshall, and General H. H. "Hap" Arnold. Other volumes of papers detail much of the early history of radio broadcasting, the Bell System, electronics, air instrument landing, bombing, and navigation, and numerous other such matters.

He wrote the Congressional librarian, "I have carried on a consulting activity during all my professional career. In this I have tried never to do the same job twice." All his life, Edward Bowles has been an unorthodox system thinker who could apply his intellect to any problem.

These requests for his papers affirm what those who know Bowles well already recognize: that the achievements of this remarkable man who has never sought personal fame or fortune

ELB

By Dorothea Wolfgram

ELB is the monogram of alumnus Edward Lindley Bowles, whose tracks are indelibly imprinted on the development of twentieth-century electronics technology and its application to U.S. military effort during World War II and thereafter.

should be documented. "Who is going to write that book?" asked Henry Zimmerman, a 1938 Washington University engineering graduate who is a colleague of Bowles's at MIT.

The answer to that question is probably that a dozen persons will write of Bowles as they deal with various subjects in which he is a key figure. In the twenty-first century another dozen scholars will probably write books specifically on Edward Lindley Bowles.

But it is likely that none will do him justice, because following the trail of his life through its more than eighty years is like hanging onto the tail of a comet. Worlds are left behind for something else before they have really come into focus. His memory zips back to recollection of another activity and he relates a telling anecdote, but there is so much ground to be covered, that he forgets to fill the listener in.

If this intellect can remain dazzlingly alert at eighty-two, what must it have been like to keep up with Bowles at twenty, or forty, or, even, sixty? Of the many who have tried, only his wife of fifty-eight years, Lois Wuerple Bowles, has managed. She does so now, as she must always have done, by quietly supporting his brilliance, by listening, by loving.

THE DAUGHTER of another highly intellectual, somewhat quixotic man who was dean of the Washington University School of Fine Arts, Lois Wuerple met Ed Bowles through his sister, who was a fine arts student and staff member, and Lois was somewhat disturbed by him. "I remember that I didn't like him at all at first. He was

such a country boy, but as the years went on, he was always there and I guess I just got used to him. After I finished my degree in home economics at the University of Wisconsin, I taught, but by then it just seemed natural that we would be married."

Bowles confesses that he has never been one to believe that he could do things by a direct approach. What Lois Wuerple didn't know at that time was that Ed Bowles had fallen in love with her on sight and had set out then—as he did all his life—to manipulate events so that his way eventually became the only natural way.

"I've always been too much of a maverick and an opportunist to be able to come in the front door," he says with glee. Obviously, some of the fun of his life has been in that game of turn-about. To a large extent, however, that modus operandi was dispensed with in his service of Secretary of War Stimson and Generals Marshall and Arnold. The times and the men swept aside many of the modes of indirection which normally oil the machinery of human interaction. Advisors were valued not for their style, but for their ability to analyze a problem, come up with solutions, and implement them.

In such circumstances, Bowles was in his glory and was accepted with trust and intimacy. In July 1944, when the British requested U.S. aid in defending their country against the buzz bombing Germany had begun, Chief of Staff General Marshall sent Bowles a memo saying, "While this is not directly in your bailiwick, please discuss the question with the interested U.S. officers."

Bowles accepted that request as a commission to solve the problem. And he did.

HE RELATES, "Knowing of the imposing delegation which had met with him that morning and sensing what was needed for the emergency (SCR 584 radar, fire control equipment, proximity fuses), immediately that afternoon I pulled together the people concerned. I avoided the delay of Lend-Lease by the device of assigning the materiel to General Eisenhower as Chief of the American Forces. He was to make it available to the British as long as he deemed the emergency to exist. We were loading the requisite materials on ships the next morning. On the other end the matter was supervised by my advisory specialists who were already established under General Eisenhower and General Spatz. The result was that thereafter we destroyed above 90 percent of the buzz bombs.

"Upon attempting to report my actions, however, I found that Marshall had left town. There was nothing to do but compose the order consigning the material to Eisenhower myself, signing it with Marshall's name.

"When Marshall returned, I crawled into his office, fearful of his reaction. After hearing me out, he looked at me quietly, coolly, and in his soft voice said, 'Bowles, if you had handled the problem any differently, I would have been disappointed.'"

Edward Bowles was born in Westphalia, Missouri, one of five children of Samuel Addison and Julia Johnson Bowles. His father had taken a law degree at Wash-

ington University in 1877, but had been dissatisfied with law and had turned to medical school and ten years later to practice in Westphalia.

Since the community had been established by German Catholic immigrants and Jesuits, the Bowles children were well educated in the only available school, a Catholic one. But Bowles, who was his brother's junior by twelve years, believes that his important education came in the hours he spent alone in the barn, where he had a shop, and the woods.

"I used to take refuge from the things feminine by getting out of the house. It is a great education for a young person to be alone so that he has to entertain himself. I learned most of what I know from the lower animals. I always trapped to get my spending money. I found out in this activity that you had not much chance to catch a wary animal on his way into a baited trap, but you could almost always get him when he was backing out.

"I used to get a forked stick with a pointed end, reach into a hollow log, put that stick in the animal's fur and twist, then drag it out by the skin.

"Once when I was in Korea leading a mission as scientific advisor to the Joint Chiefs of Staff, one objective was to get some evidence that the Russians were directly involved. At Kimpo airport, which had just been taken, we found a hangar with a MIG in it and across the back of the pilot's seat was a bag. I was afraid to go after it because it might be booby trapped, so I went back out and found a long forked, pointed stick. I put it into the bag fabric and started twist-

ing. I brought it out and sure enough, inside was a log that included signatures on some direct transactions between the Russians and the North Koreans.

"That was the first piece of evidence that went to the United Nations to substantiate what everybody already knew."

Young Bowles had an affinity for things technologic. His father's drug orders to St. Louis gave occasion for Edward to slip in his needs for chemicals to make batteries and develop photographs. At fourteen, he was sent to St. Louis to attend high school and then college while living with friends and relatives. Edmund Wuerple helped secure an engineering scholarship and he lived with the Wuerples during the University period when Lois was protectively away at school. In 1920 he went to MIT for a master's degree.

PROFESSOR KARL L. Wildes of MIT, who is assembling and writing a history of that school's electrical engineering department, tells of Bowles's years and influence. Arthur Kennelly (whose 1902 theory of what was to be known as the Kennelly-Heaviside layer of ionized air first explained Marconi's radio reception phenomenon) was nominally in charge of a new area in communications but the department was thoroughly dedicated to electric power engineering.

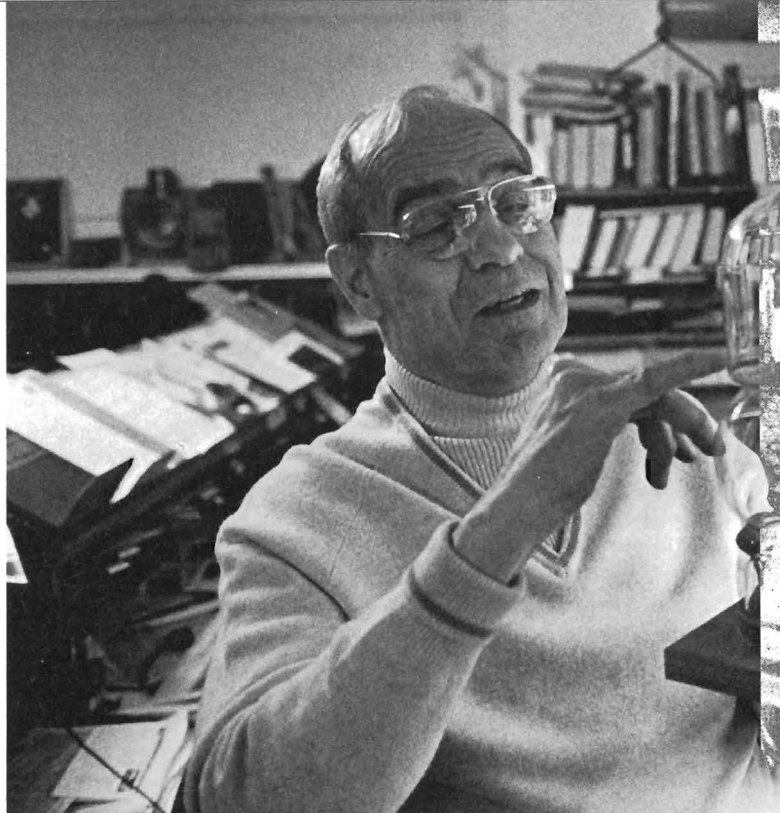
Wildes writes: "But the new interest in communications was sparked and greatly augmented by the enthusiasm and efforts of Mr. Edward L. Bowles. . . . During his first year at MIT, he studied under Vannevar Bush [inventor of the differential

analyzer, one of the early analog calculators] and Kennelly. . . . Staying on during the summer to work on a master's thesis under Professor Bush's supervision, Bowles attempted to improve the department's bifilar quadrantal oscillograph. . . ."

TO APPLY the bifilar device once he had completed it, Bowles needed a vacuum tube. The institute could not obtain one so Bowles proposed to build it. But MIT also lacked the equipment necessary for the construction, so Bowles was sent to the American Radio and Research Corporation to use its facilities. That corporation had put the first commercial local radio station into broadcast operation the previous year.

When Bowles returned to MIT, Wildes notes: "With his thesis finished and signed Nov. 7, 1921, by Professor Bush, Bowles began an intensive exploration of radio engineering and quickly became an authority in this field, beginning his radio column in the *Boston Transcript* in March 1922. In Dr. Kennelly's absence in Europe, Instructors Bowles and Tucker, with the encouragement of Professors Jackson and Bush, worked out an initial curriculum for a Communications Option of Course VI (electrical engineering), announced in the MIT catalogue for the fall of 1922."

First as an instructor, then as an assistant professor, Bowles had systematically circumvented the entrenched power structure to create a program in electrical communications. In 1925, when he was officially placed in charge, he shrewdly engaged the Bell System's support, which



proved crucial.

Bowles's program had never lacked students—in 1923, Julius Stratton, now president emeritus of MIT, had written his thesis under Bowles, basing it upon an idea proposed by Bowles. In 1928, Ernst Guillemin switched from an interest in power to the communications option. Dr. Guillemin, developer of modern network synthesis, later inherited the program from Bowles.

In the 1920s, Colonel Edward Green, an early proponent of the wireless, arranged to have MIT take charge of a radio broadcasting program he had established at his estate at Round Hill, South Dartmouth. Bowles was asked to set the program in motion.

He interested his former student Julius Stratton (who had gone on to do doctoral studies in physics in Zurich) in returning to MIT to become involved in the research program at Round Hill. Colonel Green had also developed an experimental flying field there and by 1928 the MIT research group was not only working on extensive studies on radiation patterns around radio antennae, but also had embarked on aerial navigation studies, particularly studying electromagnetic-wave transmis-

sions through fog and eventually seeding for local fog dissipation.

In these experiments Stratton was joined by Henry Houghton, one of Bowles's graduate students who later with his encouragement entered meteorology and eventually headed the department which grew out of this work. In 1929, the Aeronautics Department at MIT established a meteorological station at Round Hill. The data supplied aided Bowles's use of the Goodyear-Zeppelin Corporation's dirigible *Mayflower*, lent to Bowles to map the radiation field of antennae.

MEANWHILE back at the MIT campus, Wilmer Barrow, a former student whom Bowles brought back from Munich to be an instructor in communications in 1931, began experiments in microwave theory and applications. His work culminated in the invention of the "wave guide," an epochal contribution to the development of radar use.

Professor Wildes recounts: "The successful program in radio, fog, and aerial navigation research under the leadership of Professor Bowles represents one of the outstanding segments of



Ed Bowles's office and shop in the basement of their home is a tumbled treasure trove of history and technology. Its organization is in the mind of the occupant. Here, he explains the workings of a Von Lieben-Reisz tube, circa 1913, used for amplification.

military and with America's entry into World War II, they frequently sought Bowles out. Meanwhile, Vannevar Bush, who had left MIT in 1939 to head the Carnegie Institution in Washington, had appointed Bowles secretary of the microwave (radar) committee of the National Defense Research Committee. Bush had founded the NDRC in 1940 and later founded and directed the U.S. Office of Scientific Research and Development.

"At that point, however, there was a move afoot to sell me down the river. I was to be assigned as consultant to an Army Air Force colonel of little influence. I was shocked, humiliated, and discouraged. Then something happened overnight."

General Roger Colton, a long-time friend, called Bowles ordering him to report the following morning to General Somervell, head of the Army Services Forces. When Bowles arrived, he discovered that Stimson had preempted Somervell's request to see him and Bowles found himself facing the Secretary of War. Stimson explained that he needed an advisor on radar and that Bowles had been recommended.

"He gave me some reports and asked me to read them and comment on them. I did and was about through the third when he interrupted to ask when I could come to work. I said, 'Monday.'

"He pressed a switch on his buzz-box; General Somervell answered: 'Yes, Mr. Secretary.' 'General, I believe this is one time when I have beaten you to the draw. Professor Bowles is in my office, and I have decided to take him myself.'

"I went home weak as a rag. Perhaps it was the shock of the sudden turn of events. If there was anything I wanted, it was to be mixed up with the overall operations of the military."

THAT WAS APRIL 1942. A "Summary of the Activities, Office of Dr. Edward Bowles, Expert Consultant to the Secretary of War and Special Consultant to the Commanding General, Army Air Force, April 1942 through August 1945" was compiled and written by Allen V. Hazeltine, a former student of Bowles's who served as his technical assistant and executive through most of this period. Its 184 pages tell an astonishing story of increasingly broad responsibilities and involvement in almost every phase of U.S. military activity. The incident which Bowles fondly relates of Marshall's request concerning the buzz bombs is representative.

"There probably wasn't a man who helped me who didn't have better scientific knowledge of radar than I did," he admits today. "But I was the kind of maverick to get things done."

Stimson's appointment statement made it clear that Bowles was not to limit himself to technical problems, but was to concern himself with all aspects, including research, development, procurement, training, planning, and operations, and to advise what should be done to insure success. It was the best charge Bowles could have hoped for.

"I'm not really a very logical thinker," he says, trying to explain the cybernetic thinking which given point A might deliver him at point G, then touch on point W on its way to under-

the department's history. It was the groundwork which enabled MIT to establish and operate so rapidly and efficiently the MIT Radar School and the MIT Radiation Laboratory, important in the conduct of the Second World War."

Professor Wildes also recounts an incident characteristic of Professor Bowles's style. In the early thirties, Bowles and his perceptive and energetic young staff members realized that the new synthesis of basic electrical engineering called for a massive undergraduate curriculum revision that would organize basic materials around a set of *principles*, not applications.

Professor Dugald Jackson, head of the department, appointed a committee to study revision, but little progress was made. Wildes writes, "Professor Bowles and his communications group became restive in the spring of 1933 and got themselves (Bowles, Guillemin, Barrow, Stratton) appointed as a second committee to work parallel with the Lansil committee." When an announcement was made that the proposals would be considered at an important departmental meeting, the Bowles committee came

loaded for bear.

"Professor Guillemin and Dr. Barrow carried, of their own volition, the heavy load in the preparation of this material and enabled the Bowles committee to outmaneuver the Lansil committee at this point. In retrospect, Mr. Lansil now (1970) believes that, with the subsequent decline in power system developments in the forties, it was fortunate that the Bowles committee won the responsibility for shaping the new material along the lines of the expanding field of communications and control."

BOWLES'S PERCEPTION of his years at MIT does not differ in fact from that of Professor Wildes, but it does differ in perspective. That tale, told by a man whose outspokenness is legend and whose ability to judge character and motives seems a sixth sense, is full of anecdote and intrigue. "From very early," Bowles relates, "my boss didn't quite know what to do with the ambitious rascal that I was. It could be, he thought he'd sidetrack me by giving me the job of directing research at Round Hill."

But that work had involved the Bowles group heavily with the

standing how Z and A are not only related, but might also be the same. He always leaped directly from problem to solution, then had to go back ploddingly to fill in the pieces between.

The first problem that he tackled for Stimson—the problem of the submarine menace to Atlantic shipping—proved a classic example of the Bowles style.

For three weeks Bowles gathered material he needed to understand the problem. He would spend the day talking to people about it and at night, in the confines of a tiny kitchenette apartment in war-crowded Washington, spread his materials over the bed, reading, assimilating, mumbling, thinking out loud, shuffling, reshuffling, finally assembling a network which delivered a sound solution.

ON MAY 20, 1942, he sent to Stimson a memorandum entitled “Vitalization of ASV Submarine Destruction Program,” pointing out that antisubmarine warfare was a specialized problem and would be best addressed by a carefully defined and thoroughly planned specialized attack program. He then proposed a plan, the essence of which would be a bombardment group under the War Department whose composition, equipment, research program, training program, and general operation was directed to this single task. The Bowles plan called for an Army Air Force unit to undertake this assignment.

Stimson read the memorandum, affixed the notation “I am clear that the ASV-10 should be implemented as to its use and effectiveness and this seems to be a good plan for that purpose,” and

sent it off to be accomplished.

STIMSON WAS delighted, and Bowles felt he had passed his first test. Stimson then sent him to Panama to study canal defense by radar.

Bowles left on June 5, having asked Dr. Ralph Bown of the Bell Telephone Laboratories to accompany him as a technical advisor. Bowles established by this invitation a pattern of civilian advisors which became the hallmark of his office. Not only was this a key element in the success of its operation, it was to become the experience of military-civilian exchange and cooperation upon which Generals Arnold and Eisenhower relied in strongly advocating a continuation of this pattern for the longterm future of the Services.

But on June 22, Stimson called Bowles back from Panama to readdress the submarine question. Three days earlier General Marshall had sent an urgent memorandum to Admiral Ernest King pointing out that if shipping losses continued at the current rate, the Army’s means of staging an offensive in Europe would be crippled.

The original Bowles proposal had raised the hackles of the Navy, which was resisting creation of a killer force under the Army Air Force, contending that such a force would not be effective. That resistance had elicited the Marshall memorandum.

The stalemate dragged on for months. “In 1943, it became apparent that we immediately had to mount a European theater offensive and to do this we had to have safe Atlantic supplyways,” says Bowles. He set to work to prepare a more detailed analysis, sup-

porting the original concept with more data and submitting to Stimson on March 1 a classic report, *The Acute Problem of Ocean Borne Transport and Supply*.

On March 26, Stimson found the occasion to bring the problem to President Roosevelt by sending him the Bowles report. The President had a week earlier called in Marshall and King to discuss the European Theater offensive. After a number of counterproposals, on June 9, General Marshall agreed to turn all antisubmarine responsibility over to the Navy. Hazeltine reports that thereafter the basic proposals of the Bowles report were carried out swiftly and successfully by that organization.

Twice during his early years with Stimson, Bowles fended off moves to attach him to a regular branch of service and place him in the regular military hierarchy. Since the second came from General Arnold, Bowles went to Stimson with his dilemma. “I greatly admired Arnold and wanted to work for him, but the only way that my operation could work successfully was to float free. We’d have been shackled by military ranks and committees, one of which produced three inches of reports on the question of shortening WAC skirts.”

In August 1943, while remaining expert advisor to Stimson, Bowles took on the added responsibility for shaping and guiding communications including radar for the Army Air Force.

The network of scientific advisors whom Bowles recruited and directed in these years reads like *Who’s Who in Science and Technology*. “At MIT, Edward

had built an organization that none could hold a candle to,” says Lois Bowles, whom her husband refers to fondly as “my sidewalk superintendent.” “There was no question that he would do the same within the War Department.”

IT IS IMPOSSIBLE, and probably unnecessary, to assess the influence of Bowles’s office on the course of World War II. The citation which accompanies the award of the Medal of Merit, signed by President Truman on February 2, 1948, reads in part: “. . . Dr. Bowles, of brilliant mind and gifted with wide imagination, made a contribution to the war effort which was two-fold: first, his own developments in the field of radar, and second, his very effective stimulation of the work of others including assistance to the scientists and interpretation of their work to the armed forces. An outstanding authority on high-frequency radio, his years of work in the field little frequented largely assisted in forming the basis of extraordinary success of microwave radar. . . .

“Later, as scientific advisor to the Secretary of War, he was a leader in pressing the concept of scientific collaboration between the laboratories and the armed services. He devoted his talents with sustained enthusiasm and resourcefulness to furthering this collaboration. These were brilliant accomplishments. Dr. Bowles’s contribution to the war effort was unique.”

A similar citation accompanied the Distinguished Service Medal, an honor usually reserved for the military but conferred on Bowles for his work with Arnold.

Lois and Edward Bowles in front of their home in Wellesley Hills, Massachusetts



The British were simpler in appointing him Honorary Commander of the Civil Division of the Most Excellent Order of the British Empire, "in recognition of the valuable service which you rendered to the Allied Cause in various fields of scientific research and developments."

BOWLES REMAINED AS consultant to Stimson through 1947 and to Arnold, who subsequently became head of the new separate Air Force, until 1951. When the Bowleses came back to Boston, Bowles did not return to MIT as a full-time professor. "We simply could not afford to," says Lois Bowles. Edward Bowles's university and wartime effort had placed a heavy family burden on his wife. She had carried much of the responsibility of rearing their two sons to free her husband to undertake his duties. In addition, the critical illness of their younger son was a financial burden, one that had been exacerbated by the wartime cessation of Bowles's industrial consulting.

"Actually, when Ed Bowles returned to MIT there seemed to be no position available commensurate with his wartime responsibilities," says Wildes.

"In addition," assesses his colleague Professor Zimmerman, "it is too bad that a top-level place wasn't created. Bowles has a great research entrepreneurial talent and he certainly didn't mind ruffling feathers if it helped to get the job done."

Bowles continued to be active at MIT as a consultant in electrical communication until 1963. When MIT established a business school, Bowles was asked to consult on that project and from 1952

to 1963 he was consulting professor at The Sloan School of Industrial Management. But the thrust of his work in the 1950s and '60s was independent consulting.

He was general consultant to Raytheon Company from 1947 to 1966, a board member and later president of Whitin Machine Works, a consultant to Analex Corporation, Information Transfer Corporation, Anderson-Nichols and Company, and, finally, a board member of White Consolidated Industries.

He also carried on much public service. Perhaps chief among these tasks was his chairmanship of an Ad Hoc Advisory Committee on VHF-UHF Television Channel Allocations for the Senate Committee on Interstate and Foreign Commerce. Much of the 259-page report that committee submitted in 1958 was written and researched personally by ELB. He was also involved as an expert consultant and confidant during extended patent litigation against Radio Corporation of America by Major Edwin D. Armstrong of FM fame.

IT IS NO WONDER that the two congressional librarians would come upon Edward Bowles independently. In 1963, David Mearns wrote, "It was in our recent organizing of the papers of General Arnold that we were reminded of your great assistance to him and to the country."

In 1970, Roy Basler put Bowles in different company. He wrote: "Because of your long and wide-ranging association with microwave and radar communications, electrical engineering, and education, your papers would form a particularly rich resource for future biographers, historians, and commentators on twentieth-century science and technology. You may be interested to know the Library holds the papers of such figures as John Ericsson, George Washington Goethals, George Ferdinand Becker, Frederic Eugene Ives, John Hays Hammond, Jr., Grover Loening, and Vannevar Bush. As you can see, the Edward Lindley Bowles papers would not be isolated from comparable materials."

Ed Bowles says that if he belongs in the company of those pioneers of electronics, it is because he learned from nature two lessons: how to use the indirect method and how to judge all animals, including men, by their tracks. Lois Bowles chides him for that irreverent analogy, and he looks chagrined, but his eyes twinkle.

"Hap Arnold," he reminisces, "was the perfect soul to stir up an organization and put the pieces back together. He was exactly like Professor Jackson at MIT. If you came in to ask his permission, he'd throw you out. You just went in to tell him what you were going to do."

In the sunroom of their home in suburban Boston, Ed Bowles leans back to put his head on a pillow his wife had just tucked in behind him, smiling at a recollection. "I once went in to Jackson, to ask: 'Professor Jackson, is this my responsibility or Bush's?' He was quick to respond sharply, 'Bowles, if it is a failure, you are responsible; if it is a success, we are *all* responsible.'"

THIS WINTER the St. Louis weather has been mild, and it seems almost as if the absence of a battle against the elements has blanketed Washington University with normality. Classes, special events, speakers, sports have perked smoothly along.

Within the normal ebb and flow of campus life, Washington University students, faculty, administration, and staff have gone about the business of being Washington University. And that in itself is heartrending, heartwarming, disappointing, exciting, bewildering, coherent, cognitive, confounding, and, almost always, exhilarating.

Some of the events which make it so:

In mid-December, Adam D. Helfer, a senior who graduated mid-year with the A.B. degree in physics and mathematics, was notified that he had received the Rhodes Scholarship for two years of study at Oxford. Helfer, a Compton Scholar who came to the University in 1976 from his home in Rochester, N.Y., had completed the undergraduate degree with a double major in three and a half years. He will study theoretical physics at Oxford.

Like fellow Washington University Rhodes Scholar Stephen Lockhart, now in his second year at Oxford, Helfer has been among that small, pacesetting group of undergraduate students who came to campus on one of the University's more than a dozen merit scholarships. His election to the Rhodes confirms the value of these scholarships, which were instituted at the University in the face of decades of commitment to purely need-based financial support. Proponents of the merit plan argued that a few substantial awards based solely upon intellectual achievement and promise would not only attract some of the brightest students in the nation, but that their presence on campus might also electrify the whole undergraduate program. It has.

Electrifying the undergraduate experience in quite another sense

has been the consistently winning performance of the Washington University soccer team. The Soccer Bears finished the season with a 16-3-3 record, won the regional championship, and finished third in the NCAA Division III finals in Trenton, N.J. Last year, in a similar winning performance which filled the Francis Field stands with 1200 spectators for one playoff game, they came back from the East Coast with a national second place. At that time Coach Joe Carezza, a second-generation WU soccer coach, quipped that the team had come a long way from its beginnings as a "one-shirt club" (referring to the team's lack of long- and short-sleeved shirts, and home and away uniforms). This year the team also sported new uniforms.

In mid-winter, Edison Theatre played host to *The Dick Gibson Show*, a dramatization of Stanley Elkin's 1971 comic novel of the same title. Adapted for the stage by Frank Galati, associate professor of interpretation at Northwestern University, the play premiered in Chicago in the fall. After a two-month run at the Ruth Foundation Auditorium there, Galati (who also directed) and the cast moved to St. Louis for five performances at Edison. Elkin's novel, written in play script form complete with stage directions, captures the bizarre world of the late-night radio talk show. A *Chicago Tribune* critic commented, "Elkin's comic imagination, Galati's staging, and the seven cast members combine to present the outlandish, nightmarish world of *The Dick Gibson Show* in full cry."

IN DECEMBER, when First Lady Rosalynn Carter invited noted American poets to the White House for a salute to poetry and poets, Washington University's Howard Nemerov and John Morris were on her guest list. Morris and his wife attended the affair and reported they were pleased to have done so. Nemerov declined.

A few weeks later, however,

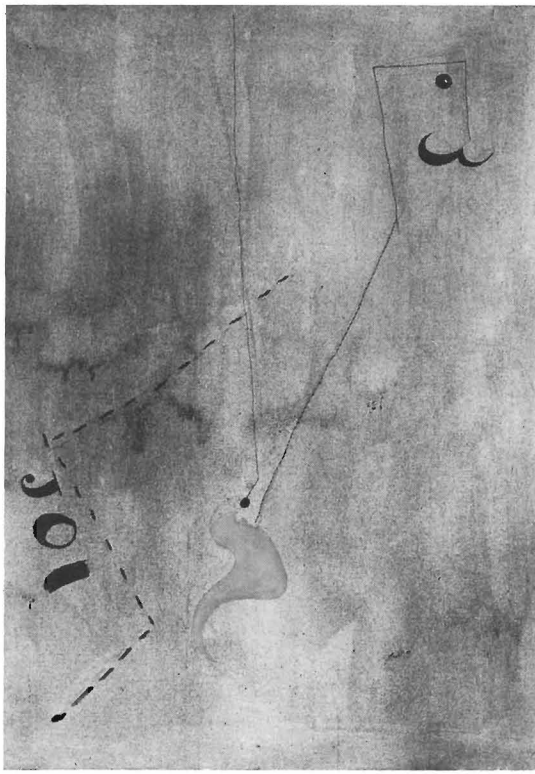
when the illness of noted physician and author Lewis Thomas resulted in a lecture cancellation, Nemerov came to the rescue. Thomas was to have delivered the annual Thomas Hall Lecture in Biology in the University's Wednesday Assembly Series. Upon hearing of Thomas's plight, Nemerov volunteered to speak in his place on the topic "Lewis Thomas, Montaigne, and Human Happiness." The tribute to Thomas, whose writing Nemerov confessed he uses in teaching writing, was eloquent and thought-provoking.

When normality at Washington University is having Howard Nemerov as a stand-in lecturer, it is exhilarating. Graham Chapel was filled.

IN ANOTHER vein, this issue of the *Washington University* magazine introduces the people behind a name which is quite familiar to recent graduates and current students. We speak of Edward and Lois Bowles, whose gift of some years ago is commemorated in Bowles Plaza, the much-used brick courtyard between Umrath Hall and Malinckrodt Center. Both of the Bowleses have long-standing ties with the University and their gift was in memory of their parents. A second gift made under a life-income agreement will establish a medical research fund at the School of Medicine in the name of their son Frederick Wuerpel Bowles.

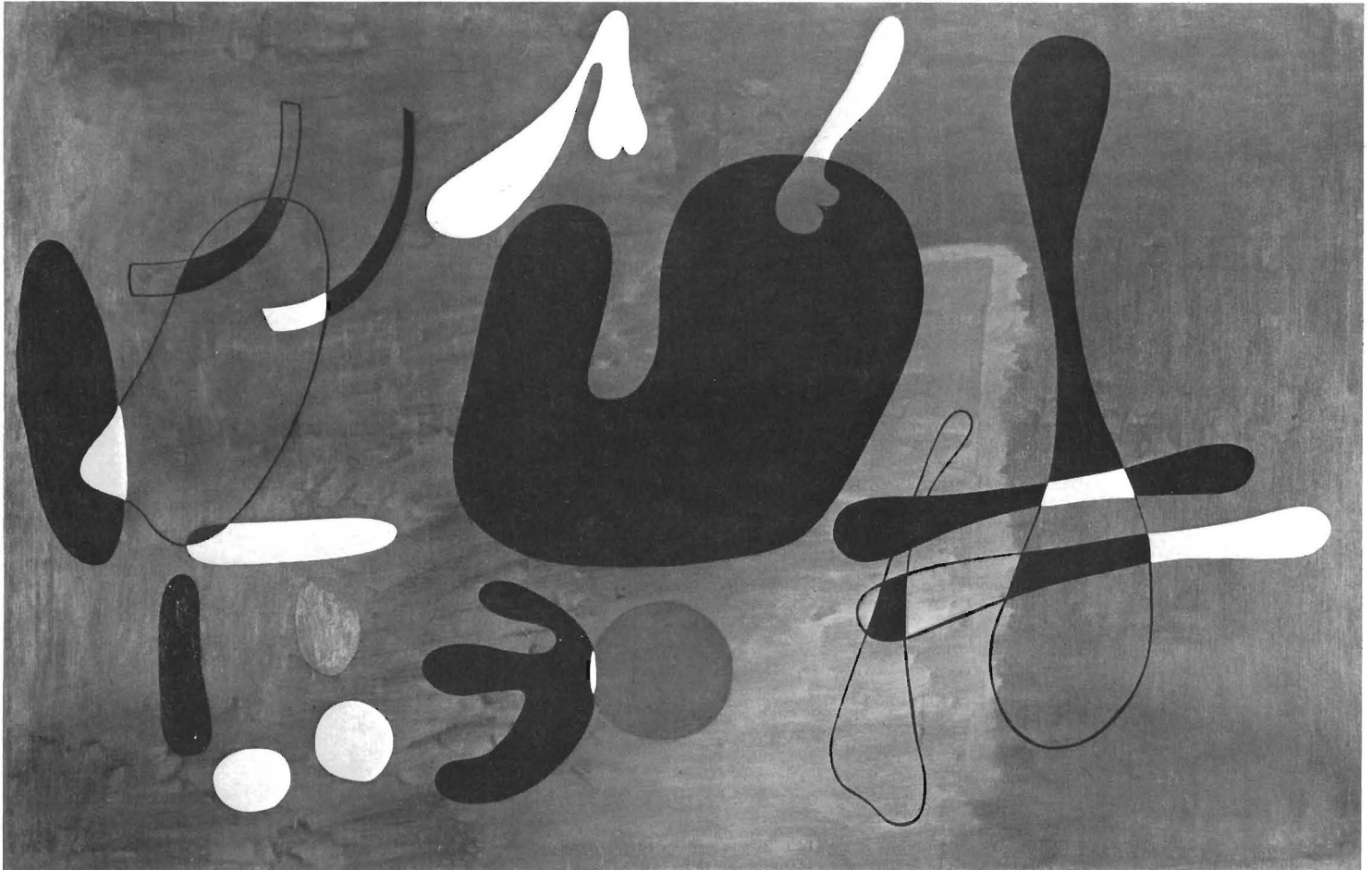
As a final item, two deaths within the University community must be noted. Edward D. Kalachek, 49, professor of economics and a former chairman of that department, died unexpectedly Sunday, December 9. Arno J. Haack, WU dean of students for sixteen years and a distinguished member of the University community for nearly four decades, died November 28, at age 76. Both leave a heritage that is unforgettable.

D.W.



“Joan Miró: The Development of a Sign Language,” a major Miró exhibit organized by Washington University’s Gallery of Art and cosponsored by the David and Alfred Smart Gallery at the University of Chicago, will open at Steinberg Hall on March 19. The more than forty-five works of art which constitute this exhibit were chosen by Sidra Stich, assistant professor of art history, a Miró scholar. Stich selected works, chiefly from private Midwestern collections, to reveal an essential “primordial sensibility,” in Miró’s work.

Her learned essay on Miró is a part of the exhibit catalogue. The University-owned “Composition,” the 1933 work illustrated below, and “Joie” (at left), a smaller 1925 oil, are included. The exhibit will remain at Steinberg through April 27. It will be displayed at the Smart Gallery from May 15 to June 18. Washington University alumna Frances Fantl, AB 71, is director of that gallery.



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