Steamy radiators and steaming cups of cocoa were among the comforts of campus life this winter. For the weather outside see page 18.
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From P.E. to P.A. Dance at Washington University

The Muse turns academic

Caution: Merging Children

Washington University alumni play a major role in school integration

The Importance Of Mutual Trust

Chancellor Danforth speaks of community service

Snow

A Herb Weitman photo essay

Engineering's Three-Two Program

A mutual alliance for mutual benefit

Russian Treasure Hunt

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Quadrilogue on Quarks

It's a small world

A Gallery of Trustee Profiles

On Busch, McDonnell, and Kassabaum

Photo credits: Page 18 right and Page 19 lower left by Peter Zimmerman; Page 26, "Forest Fire" by Denisov-Uralsky, used by permission of the owner, August A. Busch, Jr.; Page 29, "The Birth of Venus" (1638-40), by Nicholas Poussin, Philadelphia Museum of Art; purchased, George W. Elkins Collection; Page 31, "The Alba Madonna" (48) by Raphael, National Gallery of Art, Washington, D.C.: Andrew W. Mellon Collection; Pages 32-36, sketches by Simmie Gellman; all others by Herb Weitman.

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From P.E. to P.A.
Dance at
Washington University

On Washington University's campus, as on a few other major university campuses today, dance is one of the liveliest of arts. Working within a form that they respect as an art medium, students move to many tempos.

Jazz, we have been assured by the cognoscenti, is the indigenous American music of the twentieth century. It is, moreover, the only American art form, if we are to believe much of what we read. But what of modern dance?

Is it, too, as American as a McDonald's Big Mac or a Stephen Foster melody? Although some sources claim it has German roots, among the experts who find its origins in America is Washington University's Annelise Mertz, professor of dance, director of the dance division in the Performing Arts Area, and founder of the Dance Concert Society in St. Louis. Berlin-born and a dancer in her homeland with the Kurt Joos Tanz Theater (whose leader was a respected modern dance disciple on the Continent), Mertz is an authority on this medium's origins and development.

But is modern dance truly an art form? The question is not new. Margaret H'Doubler, founder of the first collegiate dance department in America at the University of Wisconsin-Madison a half century ago, was confronted with this query.

H'Doubler, who is regarded as the seminal influence in the development of dance education in this country, responded: "Dance has proved its ability to compose independently in its own medium (movement), creating dance forms as objects of art in the same sense as a painting or a musical composition is an art object. Modern dance is the contemporary phase of dance in its evolution toward its destined goal of greater universality."

During the last decade, the trajectory of the modern dance movement has rocketed upward with the speed and intensity of a satellite bound for outer space. Ten years ago, the total dance audience throughout the country was one million. Now, it is approximately 15 million. Its audiences are growing faster than baseball crowds, until today it is the most popular art form in America.

A large share of the credit for this astounding growth belongs to devoted university professors like Annelise Mertz, who over the years has graduated not only dancers, but also appreciative audiences. At Washington University, Professor Mertz has established a program respected for its quality, its size, and its diversity. But it has not been easy for most dancers. Professor Mertz arrived on campus in 1957, having toured professionally all over Europe. On the Hilltop, she, like her colleagues at institutions of higher education across the country, was summarily shunted off to the physical education department.

Disappointed, discouraged, but not defeated, Professor Mertz, fired with what some have characterized as missionary fervor, set about to win acceptance for dance.

Of those early, trying days, she reminisced: "There were so many obstacles that the situation became frustrating, even desperate. A beginner would have given up. The greatest hurdle was indifference to dance as an art form. It was looked upon merely as exercise. Students were given their choice — volleyball, swimming, or modern dance.

"Nobody else expected much of me, but I did. I decided to teach dance as a creative art. This way, I felt, I could..."
make a greater contribution to liberal arts education than through a simple recreational approach.

"F"or years I worked in complete isolation. There was no time, stage, or audience for performing. With my devoted students, I gave one lecture demonstration after another for five years to build up an interest. Finally, in 1962, I had the chance to choreograph and direct an evening program called 'Facade.'

"The performance was accompanied by poetry reading and a live orchestra: Ernst Trova's collages, now at the Museum of Modern Art in New York, furnished the backdrop. It was also my comeback as a performer. Until then, I had been so busy with administrative and teaching duties that I had never danced on campus. In spite of many technical problems, the whole program was a great success. I was exhausted but fulfilled, for the first time since my arrival at the University."

Throughout the whole struggle Professor Mertz never wavered in her belief that dance was not only an original American art form but also essential to a humanistic education. "Modern dance, which demands great inner discipline and involvement, belongs in the liberal arts curriculum. It is obvious, of course, that the majority of students studying modern dance will not opt to become dancers. But, after taking one of our beginners' courses, they develop better self-image, better posture and fitness, and an appreciation of the dance aesthetic.

"Those who do elect to make modern dance a career will be enriched and strengthened by their exposure to as many of the liberal arts classes as possible. The better the education, the better the choreographer," she emphasized.

Over the years Professor Mertz created the Washington University Dance Theatre, began a dance program for children, started a B.A. program in dance, and was instrumental in the founding of the Performing Arts Area at Washington University and the Dance Concert Society (a civic, nonprofit organization).

Early on, she developed a course entitled "Introduction to Dance as a Contemporary Art Form." It may have been the first of its kind in a university curriculum. It was not the usual "appreciation" course but, rather, an active studio course in which students could experience the creative process and discover the relationship between a dance as seen on stage and themselves as sentient beings. Mertz believed then, as she still does, that lectures and reading assignments would have a more important effect following the studio experience.

The enrollment figures for this course speak for themselves. In 1967, there were eight students; today, the usual enrollment is between 125 and 150. The dance division as a whole has a current enrollment of nearly 400 each semester.

Professor Mertz is careful to point out, however, that while modern dance must be accepted as the equal of the other disciplines in the academic program, it must not become too "academic." Modern dance must stay vibrant, lively, and creative. For Annelise Mertz, it is.

"The Germans claim that it is a German art form," she relates, "but I think that they are a bit confused. They did make a major contribution in the 1920's and 1930's, but the seeds for this development came from America."

"Isadora Duncan and Ruth St. Denis were two great American artists who rebelled against the outmoded dance forms and decadence of the classical ballet. They came independently to the conclusion that dance could convey greater depth and meaning."

Ignored in their own country during the embryonic period, they won acclaim and recognition abroad for their innovative artistry. Through their vision and spirit came the possibilities of departure which produced modern dance's legendary pioneers—Martha Graham, Charles Weidman, and Doris Humphrey. These artists initiated intensive exploration of formal design in space and movement, creating what we call modern dance today.

"Modern dance has grown up and taken many directions. It is not a system of movement, such as ballet, but a continuing state of mind which varies with the concept of the individual artist," says Professor Mertz.

"People ask what kind of technique we teach. This is not a simple question. There are no easy labels. In the dance division there are differences in approach, but we all teach technique as an aesthetic accomplishment and not as a meaningless, mechanical drill."

But "technique" is not enough. It takes creativity, sensitivity, and intelligence to become a good dancer. It requires a mix of traits not often found in a single personality. Dan Wagner, recently on campus with his company, elaborated: "To be a dancer, one must have perseverance and self-discipline, of course; love of work and a commitment to it; endless amounts of energy; and an adventuresome spirit. Above all, one must learn not to despair, even though the critics hate you and you find yourself with no money, no theatre, and no place to work."

Peggy Berg, dancer, choreographer, and assistant professor of dance at the University, commented recently: "I don't think people choose to become dancers.
Annelise Mertz, director of the dance division, in one of her rare performances. "I am really too busy to perform more often," she confides.

Before class in the dance studio.

In December 1973, Senior Kay Stegemann performed a student composition for children entitled "Kay in a Box."
In 1969, Professor Mertz and pupils in her creative dance class for children experimented with a children's environment at the St. Louis City Art Museum.


Below: Gus Solomon teaches a master class in connection with the 1977 appearance of his company at Edison Theatre. Assistant Professor Peggy Berg in the 1977 spring faculty concert performing Mertz’s “Suite for Three Chairs and Solo Performers.”
It is as if you are chosen. You start taking classes because you like them, and then you like them more and more, and at that point you decide that no other way of life is acceptable. Once you find that it is really a satisfying way of life for you, you can't say no to it. Or if you do, you'll be very unhappy."

Mary Jean Cowell, artist-in-residence, is concerned with what it takes to be a skilled choreographer. "I really think of a dance as having a life of its own. The something that I create reveals itself to me in the working process; expressing it has always been exciting and natural for me."

Steven Radecke, musical director of the dance division, has similar feelings about the music he composes for the dance performances. "Whether it be a ragtime, an electronic, or a classical piece—somehow there has to be a connection to me as well as to the dance. It's challenging, for each choreography requires special music. I have to reach inside myself and find the musical style that complements it. It must work well with the dance and yet be a viable piece and part of my personality."

Clearly, both the dance faculty and its student body enjoy dance. Burton M. Wheeler, Dean of the College of Arts and Sciences, commented: "Every dance student whom I have seen has been extraordinarily excited about what he or she is doing, uniquely positive about the University—in short, excited in a way that characterizes very few of our students. I can only hope that this will be contagious."

Some of the dance students have expressed their joie de vivre in papers prepared as class assignments. Charlotte Seltzner, a graduate exchange student in German, wrote: "I think that my exposure to modern dance at Washington University was my most radical experience of art in the U.S.A. I have learned to value modern dance as an art form."

Tracy Ronvik, who writes with the precision of a poet, described the special type of sensitivity and awareness that she developed in the dance courses. "Studying dance is something that benefits one outside of the dance class, as well as in . . . It has meant a certain rediscovery of my own body and its capabilities, a rediscovery of space (I never thought of it as something you carve designs in), and a greater reminder of the importance of openness."

Dance, it is evident, has made a place for itself on the campus, but even as it grows and prospers, Annelise Mertz dreams of expanding its horizons.

With her colleagues, she has drafted a proposal for developing an M.A. degree program in dance. Under the umbrella of this advanced degree, Professor Mertz has prepared a curriculum for those who want to become dance therapists, choreographers, performers, or educators.

Meanwhile, many of her students are winning acclaim. Among them is Alison Becker Chase, AB 69, and a member of the Pilobolus Dance Theatre, a contemporary dance company which takes its name from a sun-loving fungus. Booked for performances in Edison Theatre on April 28-29, this troupe of six has had the courage, according to Clive Barnes of The New York Times, "to reassess some of the tenets of dance that we probably all take a little too lightly, a little too much for granted."

B ringing in such fresh and unusual talents is still another responsibility of the dance division. All dance students are required to attend the individual performances (there will be four companies in residence at Edison during the '77-'78 academic season) and to comment on them in class papers.

Rehearsals are under way for the Faculty Concert on March 31, April 1 and 2, and for the semi-annual Student Concert on May 5, 6, and 7. These performances climax the dance season at Washington University. Plans are also being made to celebrate the first National Dance Week which begins on April 24. Philatelists will celebrate the occasion by collecting three special U.S. postage stamps depicting ballet, modern dance, and ethnic dance.

"I think, perhaps," concludes Professor Mertz, "that Martha Graham wrote something that applies to all of us who choose dance as a way of life. She said, 'When the dancer is at the peak of his power, he has two lovely, fragile, perishable things. One is spontaneity, but it is something arrived at over years and years of training. It's not a mere chance. The other is simplicity, but that also, is a different simplicity. It is the state of complete simplicity, costing no less than everything, of which Mr. T. S. Eliot speaks.'"

Dance is now a permanent and important part of Washington University. These days, it is as spirited as its champion: Annelise Mertz.
CAUTION:
Merging Children

By Dorothea Wolfram

Washington University alumnus Warren Brown is the superintendent of the Ferguson-Florissant School District of north St. Louis County. In 1975, the district was ordered by the federal court to reorganize its schools to carry out a court-specified desegregation plan. Brown and his staff, many of whom are also Washington University graduates, have worked carefully and cautiously for three years to make the transition smooth and to sustain educational quality in their integrated schools.

On June 7, 1975, Judge James H. Meredith of the U. S. Court for the Eastern District of Missouri ordered the Ferguson-Florissant School District, one of the largest in St. Louis County, to annex two adjacent districts. It was to absorb the small, poor, all-black schools of Kinloch and the medium-sized, integrated, wealthier schools of Berkeley to improve the quality of education available to students of Kinloch.

The annexation order bound together three parties that had been in an uncomfortable alliance for more than four years. They had been notified early in 1971 that the U. S. Justice Department had determined that the children of Kinloch were being denied equal protection of the law under the Fourteenth Amendment. The Justice Department stated that Kinloch had been maintained as an all-black district that provided "demonstrably inferior educational opportunities" in comparison with other schools of St. Louis County. The Ferguson-Florissant, Berkeley, and Kinloch Boards of Education were asked to develop a plan for desegregating the Kinloch schools.

The request asked the impossible. Frequently two parties would agree—never three. Although all were sincere in recognition of the inequity and in their desire to redress it, each had its own constituents to represent, its own identity to preserve.

With no voluntary three-party plan forthcoming, the Justice Department filed a lawsuit in September 1971, naming as defendants the State, County, and the three local boards of education. Subsequently the court ordered the State Department of Education to develop a plan that would "disestablish the racially dual system of school districts in St. Louis County and eliminate the continuing effects of past discrimination against, and denial of equal educational opportunities to students in the Kinloch District."

After careful study, the state submitted a plan which, after revision, was adopted by the court.

"The Ferguson-Florissant District took the position throughout all the proceedings that it was an innocent bystander. The district did nothing to cause the segregation in Kinloch and there was no constitutional violation on the part of the district. Nevertheless, the court chose to overlook that legal argument and included the district in the remedy," explains Washington University alumnus Norman Parker, AB 31, JD 34, long-time attorney for the district.

Realizing, that all three districts wished to appeal that decision, Judge Meredith delayed the actual integration of pupils and staff for one full year. Appeals were pursued through the U. S. Eighth Circuit Court of Appeals and to the U. S. Supreme Court, which declined to review the lawsuit.

"That ended the hope for a reversal of the annexation order," says WU alumnus Warren M. Brown, AB 49, superintendent of the Ferguson-Florissant District and the man responsible for implementing the court order. "We learned very quickly from Boston, which was making headlines at that time, that we needed to keep this action from becoming a political issue. We contacted municipal, state, and federal legislators and pointed out that there was no hope of overturning the decision. The need then was for full community cooperation in making an orderly transition. We received, on the whole, very positive support from our political leaders. That was essential."

If Warren Brown were to begin, "What saved us was..." he could go on forever. An able politician and administrator with a fine appreciation for his staff and constituents, he recalls the impact which the order had throughout the newly enlarged district, although he notes also the orderly process by which the desegregation was planned and implemented.
“When the order finally came, we were startled and disappointed, but we were not stampeded,” he says. “Our initial success and continuing successes are largely due to the quality of the communities with which we are dealing. All are committed to high-quality public education. Despite its poverty, Kinloch had a great deal of pride in its educational system and its educators. Its citizens were bearing a self-imposed school tax burden that was among the highest in St. Louis County. Berkeley’s property tax rate was low but because of a high industrial tax base the district had a very sound, integrated academic program. Ferguson-Florissant is made up of solid, middle-class residents who have a high regard for education and high educational aspirations for their children.

“Another factor which contributed so much was the timetable set by Judge Meredith. The year to plan and prepare enabled us to anticipate problems and prepare for them. In addition, we were working with a plan that was very specific, so we quickly could relieve the greatest fear factor the community faced—the fear of the unknown. It was clear what was going to happen, to whom, and when. We felt that if we could keep our publics informed, the transition could be made without much disruption and without interrupting the quality of the educational program which we offered.”

Midway through the second year of integrated schools, has the plan succeeded? The question elicits many answers.

“Yes,” says Brown. “Our staffs and our students are integrated—schools vary from about 20 to 40 percent black enrollment; the quality of our educational program is holding up; few white families have fled; and, for the most part, the reorganized district is accepted by all.”

“Who is to judge?” asks Ann MacDonald, MA 72, former principal of Kennedy Junior High School in Kinloch. “The loss-gain factor should be weighed individually. The people of Kinloch lost a vital part of their community, their schools. And the children of those schools lost self-identity and years of tradition that can never be replaced. They gained educational advantages they could never have had before.”

“We lost our neighborhood schools,” says a Berkeley mother. “Kinloch did too, but that’s not important compared to the gain of equal educational opportunities. How can I resent my kids’ riding a bus to school when I know that black parents for years had to put their kids on buses to go across town to schools that were not as good as the ones in...
their neighborhood?"

"I don't know," says alumnus Bob Fritz, AB 63, MA 67, assistant to Brown. But his reservation is philosophical, not pragmatic. "We have complied with the court's order; in fact, we have bettered it. The original concern was simply for Kinloch schools. We have, in addition, made changes that improve the racial distribution in Berkeley area schools. Our schools are well integrated, and I have no doubts about the quality of the education offered at all. But I understand why black people ask, 'Is education superior because whites and blacks sit next to one another?' It isn't, of course. Education is superior because people care, because parents are dedicated to quality, and because children are well taught from first grade upward."

"I don't know," says WU alumnus Eugene Cisco, AB 60, veteran elementary school teacher and civil rights proponent. "The education of the Kinloch children now in the Ferguson-Florissant District is more equitable. It seems to me that is what the court order was all about. It has happened with less trouble than many other people experienced and with less upheaval than could have occurred."

**Teacher after teacher, counselor after counselor (many Washington University-trained) echoes his sentiments. It isn't perfect, but it works well.**

In the specifics of carrying out the court-ordered plan, Brown and his staff and the Ferguson-Florissant School Board were aided by a Biracial Advisory Committee set up by the court. It was composed principally of those board members who had been squeezed out of office by the annexation. In structuring the committee, Judge Meredith gave an important position—almost a veto—to Berkeley and Kinloch. The committee was made up of two former board members from Ferguson-Florissant, five from Berkeley, five from Kinloch, and two citizens from each of the former districts. The governing Board of Education was composed of four Ferguson-Florissant members and one member each from Berkeley and Kinloch.

"At first," explains WU alumnus Henry E. Prokop, AB 50, MA 58, assistant superintendent of secondary education, "no one was quite sure what to do with the Biracial Committee. It was created by the court without instruction. As we went along, however, it became the hardest working, most helpful committee I have ever been associated with. We took all of our plans to the committee first. Sometimes members would approve or make only minor changes, but other times they would send us back to the drawing board. Their instincts were very good; they knew the schools and their communities. It made our dealings with everyone go much smoother."

"The court action actually constituted a twofold sociological adjustment," says Brown. "Merging school districts is always traumatic. Each district has a board, neighborhood schools, its own traditions and loyalties. We were faced with all of that. In addition, we were desegregating the schools in Kinloch. Ferguson-Florissant, formerly with a 5 percent black enrollment, would now have 20 percent. Kinloch children from all-black schools were assigned to schools in which they would constitute minorities of from 10 to 30 percent. The community faced all of the fears and potential problems inherent in that situation."

In their year of grace, the district's staff, parents, taxpayers, politicians, police departments, community leaders, and students began exhaustive studies in preparation for the 1976-77 school year. They undertook a comprehensive program of staff development workshops financed by federal funds of more than a million dollars.

Prokop for instance, convened sixteen committees—made up of staff, teachers, community members, parents, and students, as appropriate—to decide how to do almost everything in the Ferguson-Florissant District schools. They studied student orientation, parent orientation, curriculum, traditions, clubs, student council and extracurricular activities, rules and regulations, security, athletics, special projects, libraries, advisement, guidance, adult education and other areas. Prokop's meeting schedules for those fourteen months cover six single-spaced, legal sized sheets. Everyone in the district spent days planning and preparing.

"Most questions arose because we were merging schools; few were racial," says Prokop. "All Kinloch schools were being closed. The junior and senior high school students were going to Cross Keys and Florissant Junior Highs and McCluer North High School. That year we did not touch Berkeley secondary schools, although we've now made slight adjustments for better racial distribution."

"In the junior highs we were to send 120 Kinloch black children into each school. At McCluer North we were integrating 200 black children into a school of almost 2200. In all cases, they would constitute minorities of about 10 percent. Our concern was for these youngsters, but there were also hundreds of details to consider in putting three organizations together. What, for instance, would we do with Kinloch trophies? How could Kinloch's Afro Ball (an annual program featuring black traditions) fit into the McCluer North program? What could we do so that the students who would have been on Kinloch's student council..."
would have influence in their new school?

“We don’t pretend to have solved all of our problems, but we surely tried to tackle them. We have an Afro Ball at McCluer North. It isn’t exactly the same, but it is a black-student initiated and implemented activity. We have a policy that any student group that black students join must have a black student on its executive board. We redrew our rules and regulations completely to assure that disciplinary action is equitable to all. We run ‘activity’ buses to all secondary schools so that all students can participate in after-school activities.”

The Kinloch trophies are now at McCluer North, but will likely be returned to Kinloch upon completion of a community center the city plans to build on the site of the former Dunbar School.

“THERE IS no doubt that the merger was hardest on the people and students of Kinloch,” says Brown. “They lost part of their community: their schools. These were community centers as well as places to educate children.” The Kinloch Chorus was a source of neighborhood pride. Fine high school basketball teams provided recreation for the entire community and exported its pride. The Afro Ball drew a packed adult audience to the high school.

It is the sense of this loss—as strong and as lasting as grief over a lost family member—that Ann MacDonald communicates. Ann began teaching in Kinloch when she was 22. At 32 her goal is to complete her Ph.D. degree at Washington University in the next two and half years. “We did a great deal of research during the year of planning and we took what we thought was best and tried to transplant it, but the state plan cut away a part of us. At the choir’s Christmas vespers in Kinloch, you would see people you never saw any other time of the year. When the kids had a chance to go back to their roots with the Afro Ball, you would see black beauty exemplified as it never was before. That’s all gone from the community.”

“KINLOCH’s only about a mile wide and a mile long,” says Bob Fritz, “and in many ways it is like a small town. It is also an old community, and in 1937, when Kinloch was separated from the Berkeley district, the community became even more isolated. It is now part of one of the largest school districts in the county.”

Kinloch parents were concerned about the distances their children would have to travel to school. If a child became sick, how would he get home? How would his parents find out if their child was having problems in school?

The latter has proved something of a problem, noted one counselor. “Our teachers found last year that some Kinloch parents did not attend parent conferences. That disappointed and puzzled our teachers. What we now realize is that some parents didn’t have transportation or couldn’t find the school. Some thought they couldn’t (or actually were unable to) get off work, but they didn’t want to admit any of those things to us. It is going smoother now, but we have not completely solved the problem.”

The cultural shock of the annexation was felt by all teachers, although their preparation for change was so thorough that one elementary school counselor was prompted to comment, “When the school year finally started, there was a sense of
Ann MacDonald, MA 72, at her work as assistant principal of Berkeley Junior High School.

relief that now we could stop bothering about things to worry over and get down to the job of teaching. By spring the previous year, we could go to a meeting and someone would ask. 'Well what are you worried about?' We would say, 'We're not worried.' And they would wonder why we weren't worried and they would look worried and they would worry about that."

Carol Fuss, MSW, MEd 73, a counselor at Cool Valley School, laughs in recollection at the truth of that comment and yet believes that the careful and costly programs of teacher education made a vital contribution to the incredible success of the merger—then and now. "The commitment to quality education by the people of this district, from Dr. Brown on down, is unquestionable. The quality of the resource people they brought in to help us look at what was happening and what was going to happen was fantastic. For instance, O'Dell Nails, a black school administrator from Pontiac, Michigan, was brought down to do workshops. Many teachers and counselors were given release time to attend, so his ideas were widely heard."

One of the persons primarily responsible for staff development programming was the director of pupil personnel for the district, Shirley Salmon, who as an adjunct member of the University's faculty from 1972 until last spring had also trained many of the Washington University alumni involved. "Shirley understood the importance of looking at successful models of integrated systems," says Carol. "Her contribution was very significant."

Teachers and counselors were taught by national educational consultants and by community resource people, including professors from Washington University and St. Louis University. They learned about black history, culture, family structure, music, language, and other subjects. They were given help in increasing their abilities to individualize instruction to help children needing remedial work.

GENE CISCO recalls a black language course "to desensitize us so that when we heard a kid on the playground say, 'Aw, your mother...;' we would understand what he was implying and what he was not (and even how that phrase came into his language, which he may not know). Those expletives are carryovers from training sessions for early civil rights sit-in's. Demonstrators desensitized each other by casting aspersions on the reputation of their mothers, grandmothers, husbands, etc. As I recall, it is called 'playing the dozens.'"

"Sometimes I think," said Ann, "we black folk got a little upset by all of this. It seemed as if our white colleagues were being taught to receive some foreigners, even 'the enemy.' Actually, perhaps I think the programs were only a little one-sided."

The workshops were not just for teachers, counselors, and administrators; they included bus drivers, secretaries, and cafeteria workers as well. "We have long had a parent advisory council made up of representatives from our parent-teacher groups," says Warren Brown. "That council was our main parent 'outreach.' For parents, our first effort was to let them know early what was happening. Later there were PTA exchanges and parents had opportunities to ride buses to the schools their children would attend. We used the community newspapers and our own continuing publication program as the main outreach for other community members and taxpayers."

The district devised many pupil exchanges. Students went to concerts together, attended athletic events at the schools to which they would be assigned, and had integrated field trips. There were many such programs at the Little Creek Wildlife Area, an ecological preserve within the district directed by WU alumnus Robert Borgstede, AB 53, MA 53. Slowly, students, parents, and teachers began to experience their new situation. "That year was also valuable because we had a chance to observe Kinloch students in their home setting," Warren Brown recalls. "Our teachers and staff spent a lot of time in Kinloch schools seeing the kinds of experiences students were getting and analyzing strengths and weaknesses of the program."

Some high school teachers at McCluer North admit that they were dismayed by the differences in academic preparation and skills, particularly in verbal abilities and writing, displayed by some of their students from Kinloch. "It takes time to catch up," one observed.

Academic testing of all Ferguson-Florissant pupils last spring indicated two important things: that Kinloch stu-
Students are gaining ground and that other pupils are not suffering academically. "If this weren't the case," says one administrator, "people would be leaving."

Bob Fritz says there seems to be little flight. "Our enrollment figures have been very close to our projections. They are in line with other districts and reflect the general decline in the schoolage population."

Billie Teneau, AB 57, who teaches speech and dramatics at McCluer North, finds her classes little affected. Last fall in a school play she cast an interracial family "not by design, but by talent—and there certainly was no objection. Basically, I think it is too early to be terribly impressed by our success and too early to relax."

Among the Ferguson-Florissant District teachers, there appears to be joy and pride in the cohesiveness of the staff. Michael Imergoot, AB 71, MA 73, who teaches physical education in a typically well-integrated elementary school, says he could not think of a better place to educate his children, if he had any. Marjorie Schaefer, BSBA 49, who teaches with Michael, explains that the Individual Guided Education Program (supported by federal funds) requires teachers at Walnut Grove and other schools to work closely together. Although she admits that it has disadvantages, she finds most of her colleagues cooperative and hardworking.

"The kind of training that we got in that year before we received Kinloch pupils simply did wonders for the staff," points out an assistant principal. "Toward the end of the year, I recall, we had some warmup games before a workshop. In one, our group was to keep a balloon afloat by body movement. I remember I got so tired I said, 'I believe I'm about ready to let that balloon sink.' Later one of my staff said, 'You know, it really bothered me when you said that. I hated it that you were willing to give up so easily.' Now you can imagine the schools we can have with that kind of openness and freedom to talk to each other!"

"There continues to be some clashing of cultures, as well as some human relations problems and working out of hostilities that have nothing to do with the merger," comments Shirley Salmon. "But I don't think that we have let go. There is a consistent effort to maintain what we have built. It will take a long time to do this really successfully."

Today Ferguson-Florissant teachers seem to be willing openly to confront their problems, as well as their successes. One secretary worries about the kind of chip-on-the-shoulder attitude she feels exists this year. A teacher complains of an incompetent black staff member who has been kept on "for political reasons." Someone else says, "I worry about incompetent white teachers. And we have those, too." Counselors express a concern that in secondary schools there is an isolation among former Kinloch students that nothing seems to overcome. A black administrator says frankly she's unhappy with her position. Some black parents say they feel let down in their expectations. "All of that is bound to happen," says Ann MacDonald, "but we are all working hard to make it succeed."

Warren Brown says, "We felt we could handle it. Our people are good, solid, law-abiding citizens. We have a long history of strong local government and honest administration. Everything seemed destined to work, if we handled it right, I think we did."

"What we would like now," say Bob Fritz, "is for the court to give our community back its schools. I don't think that any of us knew the value of local control of schools until it was threatened."
The Importance of Mutual Trust

By Chancellor William H. Danforth

Chancellor William H. Danforth was named 1977 Man of the Year by the Saint Louis Globe-Democrat. He delivered the following address in Edison Theatre in January at ceremonies marking that event.

I am deeply grateful for the opportunity to join the Globe-Democrat Men of the Year, a distinguished group of individuals, many of whom have been personal heroes to me, all of whom I have admired for years. I have known three Men of the Year as Chairmen of the Board of Washington University. The group includes Father Paul C. Reinert, one of the nation’s most distinguished educational statesmen, and has included Ethan Shepley, former Chancellor and Chairman of the Board of Washington University. Each individual has made a major contribution to this community.

I would not be joining the company except for the accomplishments of many, many individuals which have reflected credit on me in the various roles that I have been privileged to play. There is another factor. I have repeatedly received advice and counsel from others, many of whom are in this room. Your advice has not only kept me out of trouble, but also has given me solutions to problems that I have not been able to work out myself. The award should be shared by too many to count.

Each Man of the Year has been selected for contributions to Saint Louis. Yet I think all would join me in saying that no one has put forth more effort for the city that he loves than G. Duncan Bauman, publisher of the Saint Louis Globe-Democrat. He has entered into the life of the community and worked hard for causes in which he believes. My experience with Duncan began in 1965 when we worked together through the Health and Welfare Council to bring Medicaid to the people of Missouri. Later, with Dean Robert Felix of Saint Louis University, we started the Regional Medical Program for Heart, Stroke, and Cancer. Duncan and the Globe have repeatedly backed charitable causes wholeheartedly. Each year, the Old Newsboys campaign raises increasing amounts for the needy. Recognitions such as this one encourage and stimulate people to contribute in their own ways to community betterment.

I have another reason for being pleased with this award being given to a chancellor of Washington University. It signifies a healing of the strained relations between university and community that occurred in the 1960’s, not only in Saint Louis but throughout the nation. For that I am thankful. Washington University remains a child of Saint Louis. We depend on Saint Louis. I believe we are an ornament to the community and serve it well. I am sure that Father Reinert would say the same about our sister institution. I will add that without the great work of the faculty and staff of Washington University I would not be receiving this award today.

I am a Saint Louisan. I am here by birth and by choice. I love this community. I owe it a great deal. I believe that Saint Louis is a great city. We, like others, are a community with lots of problems, but, because of our size and our many assets, we are also a city with great potential for showing others how these problems can be solved. Progress is being made.

We must recognize that there are impediments to building a truly great community. Perhaps the most significant one is the difficulty so many of us have in understanding the mutual interdependence of the various parts of the community. We sometimes fail to appreciate the perspective, the viewpoints, and even the value of those parts with which we do not have day-to-day contact. This lack of understanding makes difficult the development of the sense of common purpose. Instead, it becomes easy to lapse into mistrust and cynicism about what others are thinking and doing.

Let me give an example of what I mean, using the Washington University Medical Center. In the early 1960’s, several individuals caught a vision—the development of programs and the raising of funds that would ensure that the
Medical Center would meet the challenges of the next decade and serve as a world leader in medical education, research, and patient care.

Unfortunately, the work and the effort necessary to realize this dream were set aside, replaced by suspicions as the medical school and Barnes Hospital found that their interests were not in all cases identical. They battled each other to protect space, resources, and important principles. Grievances, wrongs, and slights were carefully documented and described to willing listeners. And, of course, there were many grievances, wrongs, and slights, as there always are in any human endeavor, whether it be a family or a great nation. Energy that might have been spent in building was expended in trying to rectify past wrongs and protect against future injury. Academic progress slowed; fund raising stopped.

There were, and still are, fundamental differences in approach. Those associated with the hospital were concerned primarily with providing patient care here and now. Those from the medical school tended to be more future-oriented, dedicated to teaching and research. Of course, both perceptions were not only correct but essential, for to shortchange either aspect was to weaken the common enterprise. What had happened was that honest differences in opinion about priorities became the grounds for mutual distrust. The logical and rational actions of those on the other side were interpreted always in the worst possible light. Charitable interpretations were few.

Eventually, things worked out. Forward motion was regained. The turning point occurred when Mr. James S. McDonnell recognized that the time was right for a change and suggested that the medical school negotiate from a position of trust rather than from a position of strength. The hospital, not surprisingly, responded with a modern physical plant and a great staff, perhaps on average the most talented in the world.

If those who are dedicated to healing the sick and providing for the needs of coming generations can become embroiled in controversy among themselves, so can everyone else.

In the wider community, affairs are infinitely more complex. There are many more people with great arrays of skills and talents. There are many different perspectives and goals. Mutual understanding is made difficult by the intense degree of specialization that makes it nearly impossible to share in a set of common experiences and perspectives. We, thus, lose some of the shared values that should bind us more closely together. We try to replace this loss with laws, rules, regulations, and contracts, ever more detailed. But all these written documents will not replace the cement of mutual confidence.

What if we were different? What if we lived in a utopia of mutual confidence? Now I know that Utopia comes from the Greek word meaning "no place" and I recognize that the millenium has yet to arrive, but thinking about utopias may help us to realize that we can be better than we are.

What if people looked at our complex, modern society and said, "Isn't it wonderful? So many people are contributing their own special talents and insights into making our community successful. There is the bricklayer making quality homes, the banker protecting our savings, the engineer improving the safety of travel, the businessman generating the capital which will provide the jobs of tomorrow, the teacher educating our children and grandchildren, the scholar and the scientist enlarging the accumulated knowledge and deepening humankind's wisdom, the politician running things and holding us together, the critic pointing out ways in which we can improve."

Honest views developed over a lifetime, even if different from our own, deserve respect and attention. We cannot assume that other people are necessarily more shortsighted or more selfish than we because they come to different conclusions about important issues. As a physician, I have seen enough of dying to know that people do not change their world views as death nears and all thought of personal gain has vanished. They continue to trust their own experiences and their own hard-won ideas.

I recently heard a proverb that stated an old idea in what was to me a new way: "You never know the bugs in another person's bed until you have slept in it." In our specialized community, it is hard to sleep in another person's bed. To do so, even in one's imagination, requires...
empathy and a great effort of the will. A positive relation to our community requires trust and confidence in others beyond the evidence at hand. I suspect it has always been like that, only more so today.

Unfortunately, faith cannot always be well placed. Faith must sometimes be disappointed, perhaps as often as every month or every week or even every day; but without it our community would stagnate. Too much faith is better than too little; wisdom lies in starting up afresh after each disappointment and in never allowing oneself to become cynical, jaded, or untrusting.

Recently John J. McCloy was on the Washington University campus. He quoted from Henry Stimson. Let me excerpt from words that distill a remarkable experience.

"Those who read this will mostly be younger than I, men of the generations who must bear the active part in the work ahead. . . . Let them have hope and virtue and let them believe in mankind and its future, for there is good as well as evil and the man who tries to work for the good, believing in its eventual victory, while he may suffer setback and even disaster, will never know defeat. The only deadly sin I know is cynicism."

The achievement of greater understanding and mutual trust and appreciation in our community is not only an end in itself, but also the prerequisite for major progress.

To return to the Man of the Year theme, I believe that to build the best possible community here in Saint Louis is a goal worthy of everything any of us can give it. We cannot be oblivious to national or international needs; it is just that this particular area of the country is our special responsibility. If we don't care for it and work for it, no one will. If we create something noble and lasting, it will in turn serve as an antidote to cynicism and as an inspiration to other people in other communities and in other times.

We should speak and act as if each of us had an important role to play in a common enterprise.

Because we do.
SNOW

Beautiful, soft, silent, slushy, slippery, slick.
Messy, sparkly, frosty, shining, blustry, gusty, crystalline.
Tramped, plowed, tracked, blown, drifted, packed, schussed.

Sixty-five-point-two inches this winter:
Two-point-four below 1911-1912.
Ah, spring!
Snow
Engineering's Three-Two Plan

By Bonny Essmyer

Five years ago Assistant Dean Harold Brown of Engineering initiated an educational plan which brings to the School, as juniors, students who have completed three years of liberal arts education at an affiliated college of arts and sciences. Today that plan accounts for one-fifth of the upper-division enrollments in Washington University's School of Engineering and Applied Science.

There are today, speaking broadly, two educational movements afoot: one seeks to accelerate education; the other, to broaden its scope. Both are responses of the educational community to the demands of a changing society. Some technological aspects of contemporary life require a high degree of specialization; others benefit from training beyond technology.

Sever Institute of Technology, a division of Washington University's School of Engineering and Applied Science, provides the opportunity for expanded education through its Three-Two Engineering Plan. The plan enables students to pursue a major in arts and sciences before concentrated professional study.

Although the founders of the program are its most thoughtful proponents, its students are its most vocal advocates. Barbara Finley, who was originally a premed student at Franklin and Marshall College in Pennsylvania, says that she originally saw the plan as a way of continuing study without all the "fuss and rigamarole" of transferring to an engineering school. "I'll say one thing: engineering is a good field to get into. I've had offers for everything from research associate to marketing in electronics. It's a good way to round out a more ambiguous degree." Barbara's undergraduate major was biophysics.

Greg Chrisman was a chemistry major at Illinois Wesleyan before coming to Washington University. "I don't think I would have pursued the engineering degree if it took another four years, but two degrees in five years is a pretty good idea. I feel that with the dual degree I'm much better prepared, not in the strict sense of what I've learned, but definitely in the experience I've had."

Sounds terrific, but what is a Three-Two Plan? Simply stated, it is a contractual association between a professional school and an arts and sciences college. A student accepted into the plan attends the college for three years. Then having fulfilled stated requirements, the student continues studies in the professional school for two more years. The student receives a baccalaureate in an arts and sciences major from the home college and a bachelor of science degree from the professional school.

This concept is not new in the academic world; references to such plans appear in college catalogues as early as the 1940's. But, as ever, there is that chasm of distinction between theory and reality. The transition from good idea to working plan is a complex undertaking, requiring time, careful planning and research, and a commitment of financial and administrative resources.

Much of the credit for the success of the Three-Two Plan must go to Assistant Dean Emeritus Harold P. Brown. After two previous careers—as a professor of organic chemistry and an industrial chemist and consultant—Dr. Brown came to Washington University in 1965 to serve as assistant dean and director of engineering student services. Dean Brown was director of the Three-Two Plan from its inception in 1973 until his retirement in 1977. He speaks the word "retirement" with a smile—after all, this is his third. (He still serves as an active consultant to the plan.)

From a distance, Dean Brown seems the traditional image of a science professor—tall and stern, with thinning hair and glasses; but come closer, catch the twinkle in his eye. His infectious enthusiasm was a prime source of the energy needed to pull many elements into a cohesive, functioning plan. He has a personal intensity that captures every detail without losing sight of the whole. As problems were recognized, modifications were developed accordingly—improving, shape—

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ing, clarifying. No problem was too small for his attention. "It was my baby," he admits.

Dean Brown insists on passing part of the praise along to his right-hand person, Mrs. Emily Buddenhagen. As assistant director of the Three-Two Plan, she maintained contacts with students and liaison officers while Dean Brown made approximately one hundred campus visits a year.

Under Brown's direction, the basic Three-Two structure has grown in many directions, and now includes intensive courses for Three-Two students, combined B.S./M.S. and B.S./M.B.A. programs, a Three-Two arrangement with WU's own College, and a modified "Year Abroad."

The plan has reached its present level of development because of Dean Brown's sensitivity to the educational needs and interests of his students. But this sensitivity extends beyond the classroom. On his office wall are photographs of many students who have participated in the Three-Two Plan. He knows their names, histories, future plans; who has husbands, wives, babies, jobs, and advanced degrees—not because he is required to know, but because of his personal interest and concern for the students who come under his administration. Since Brown's retirement, assistant dean and director of student services H. Boulter Kelsey, Jr., has served as acting director.

Beyond educational theory, the development of the plan has been tied to practical considerations. Besides providing students with the opportunity for an expanded education, the plan enlarges the pool of potential students for the School of Engineering and Applied Science. As director of engineering student services, one of Dean Brown's primary concerns was enrollment, and one of his trouble spots was in upper-division classes.

Average enrollment in the freshman class is 200. By natural attrition, this number drops to 150-160 by the junior year. Traditionally, those 40-50 spaces were filled by random transfers.

But in the early 1970's, college enrollment was dropping nationwide. Both Brown and Dr. James McKeelvey, dean of the school, saw the need for a means of assuring upper-level enrollment. They studied the structures of three-two plans elsewhere and adopted a similar plan at Washington University in 1973.

The School of Engineering and Applied Science is now affiliated with eighty-seven high-quality arts and sciences colleges throughout the country. In addition, there are more than 100 corresponding colleges that receive literature generated by the Three-Two office. After less than five years, the Three-Two Plan provides at least 20 percent of the School's upper-division enrollment.

But the statistics do not tell the whole story. Each affiliation is a contract between two institutions and the considerations of both must be carefully weighed. Why should an arts and sciences college join an association whose stated intent is to entice its students elsewhere, and which may, in theory, violate that college's basic tenet of existence, i.e., that a liberal education does not teach a skill, trade, or profession? This question is answered by the considerations that formed the plan itself. Society changes. An institution interested in survival must be willing to change with it, to provide the options demanded.

With increasing national interest in engineering and applied sciences, arts and sciences colleges need to respond to that demand without taking on the tremendous financial burden of developing such programs on their own campuses. The association with an engineering school whose quality is recognized nationwide brings the colleges students who would logically have gone elsewhere for professional training.

They may lose some pure-science majors who are lured into applied science, but this possibility is offset by initial potential gain in enrollment. Another attractive advantage to a college is that the expense of maintaining the plan is borne by the University. Each school's minimal administrative function is handled by a liaison officer, usually a member of the faculty of mathematics, chemistry, or physics. The liaison officer recommends a student for admission to the plan. After the student is accepted, the liaison officer, in cooperation with the Three-Two director, oversees the completion of the requirements for admission to Sever Institute. The importance of the liaison officer, however, cannot be overempha-
sized; college curricula differ so widely that acceptable criteria for admission must be carefully evaluated.

The advantages gained by the student willing to commit himself to an extra year of study are both pragmatic and personal. In today's competitive job market, a dual degree is obviously attractive. The more flexible curriculum can also be advantageous, offering an extra year for electives or advanced courses in the arts and sciences major. Thus, for the student who has already determined career interests, the plan offers a complete and compact way of reaching those goals.

But what about the student who is unsure of goals or who discovers an interest in chemistry after spending three semesters in political science? That's all right, too. The program offers three years in which to ascertain interest in science or engineering. A student who wishes to change direction after studying in another area has not lost that time. He or she receives recognition for that academic effort through the arts and sciences degree.

In addition the student who attends two institutions has a variety of contacts with faculty and student groups. This increased social and intellectual exposure inevitably results in increased student maturity, both personal and academic.

Even in its bare-bones format, the Three-Two Plan was attractive to students, but Dean Brown was not content with bare bones. Any aspect that kept the plan from reaching its ideal was game for change. In a report on the activities of the first year, he acknowledged two major disadvantages: that the student had no exposure to engineering in the first years of college work, and that limited assistance was available for the selection of a major area within engineering. The latter was the more serious disadvantage as the student must declare a major before admission to Sever.

Dean Brown's solutions to these problems—the intensive courses—have become integral to the success of the program. Intensive courses are engineering courses offered at Washington University in an accelerated format, usually between fall and winter semesters, or in late spring, when necessary. Classes generally consist of three hours of lecture daily, plus assisted study sessions, visits to laboratories or the medical school, term papers or individual special projects. Some classes are taught by more than one lecturer with each professor adding his or her own area of expertise. The courses are designed to acclimate the student to actual engineering course work and cover the same material as the normal engineering curriculum.

Students are advised to take at least one intensive course (ideally, two or more) before actually coming to Sever Institute. By taking as many courses as possible, the student has optimum opportunity to chose an area of specialization. The courses also serve to bring Three-Two students to the academic level of regular engineering students, who take these same courses as sophomores or even freshmen. There was some doubt whether an entire semester's work crammed into 14 days would be of lasting value to students, but it has been found that the total immersion in one subject tends to enhance retention of information and sustain interest and enthusiasm for the subject. Professors were surprised and pleased to find that course compactness eliminated much need for repetition, so that often more material could be introduced than in a regular semester.

Although these courses are not open to regular engineering students, they are available to faculty members of the arts and sciences colleges who wish to become better acquainted with engineering areas and to liaison officers as an aid to their academic advising.

The first intensive course, Engineering Mechanics I, was taught by Dr. Gustav Mesmer in 1975. Courses now offered cover a wide range of engineering and applied science areas. One of the newer course offerings is Engineering Applied to Biomedical Problems, coordinated by Dr. Robert Sparks.

This course attracted two very different students to the Washington University campus this January. Dr. Leonard V. Cherry, Three-Two liaison officer for Franklin and Marshall College, Lancaster, Pennsylvania, saw the class as a
Senior Linda Beach graduates from the Three-Two Plan this year with a degree in chemical engineering. She came to Sever Institute from Wittenberg University in Springfield, Ohio, and is a teaching assistant in the Chemical Engineering Lab.

source of professional knowledge for himself and career information for his student advisees. As a faculty adviser, he believes the flexibility of the plan is one of its major advantages. According to Cherry, "The extra year makes a difference... as an extra year of maturity. We always have the query from the student, 'Why should I come to a Three-Two plan when I can go to an engineering school and get the degree in four years?' Of course, it all depends on the student. When a student goes into an engineering school, the pressure is on right away. Certain students need to gain academic and personal maturity before entering that competition."

Kimberly Hafford, a junior majoring in chemistry and math at Cedar Crest College, Allentown, Pennsylvania, also took the course. Cedar Crest is a corresponding college so Kim's attendance was by mutual consent of both institutions. Her explanation for doing so echoes the reason for the courses' existence: 'Two of my main interests are psychology and science, and I was looking for some way to integrate areas I've studied. I wanted to find out what engineering involved, what it is, and what I could do with it.'

She is now considering graduate study at Sever Institute.

Although Three-Two students are a classifiable group after they come to the School of Engineering and Applied Science, they constitute only a small number of students on any associated campus. Each college probably has only one or two students entering the plan in a year. Because they come from such diverse backgrounds, it is hard to find a "typical" Three-Two student. As Dean Kelsey says, "Three-Two students are different from regular engineering students. We don't treat them differently, they're just different people." For this reason the guidelines must be flexible and each student's case is given personal consideration.

"Usually this consideration is academic, but sometimes it involves much more," Dean Brown said. Leo Fong, a native of Hong Kong, is a case in point. He and his wife Merrietta are both graduates of DePauw University. Leo was a senior there before he became interested in the plan, so he finished his arts and sciences degree before continuing at WU. Asked how they come to be here, Leo jokingly says, "I had a summer job, but I knew if I entered the plan full time, we would both starve, so I told Merrietta, 'Go west! Go west and find a job!' And she did." Dean Brown knew Merrietta's qualifications, so when a position opened in his office, he suggested an interview. She has been administrative secretary to the Three-Two Plan ever since. Dean Brown also helped expedite the paperwork involved with Leo's resident visa. Though not a student herself, Merrietta could well be their spokesperson when she says, "If it weren't for Dean Brown, we wouldn't be here."

In the same way that students require individual consideration, each associated college has its own set of requirements. Many colleges prefer that students spend the senior year in residence. For these colleges, a modified Year Abroad (abroad, in this case, being WU School of Engineering) plan was instituted. A student spends the junior year at Washington University, goes back to the home campus for the senior year, then returns to WU to finish the engineering degree. Any program offering such personal structuring is by its very nature expensive. Commenting on the future of the plan, Dean Kelsey said, "We are determined to increase student services by rearranging our resources. We have been going through the phase that industry calls "start up." With a majority of associations selected and with liaison officers established, the machinery is in working order. We are now in a position to fine-tune our operating methods to decrease operating costs without compromising the personalized consideration and contact with our students.

"There is the possibility of a computer system for evaluating student transcripts. Since college curricula vary so widely, all transcripts are currently evaluated by hand. The computer can be programmed to know immediately if any course had previously been accepted as filling a requirement. If a course is not recognized, it will receive individual attention."

"Of course this plan if not for everyone. Not every student wishes or needs to invest that extra year. But we are able to accommodate those who perceive that year as an opportunity to broaden their undergraduate education."
Although caught up in this project almost accidently, Professor Robert Williams soon found himself unravelling an international detective story of high finance, unscrupulous merchants, and political intrigue. The author, who teaches Russian history, was a fellow of the Kennan Institute, Woodrow Wilson International Center for Scholars in 1976. This article is based upon his forthcoming book, The Culture Exchange: Russian Art and American Money, 1900-1940.

The author with the painting that sparked his search: Denisov-Uralsky’s “Forest Fire.” The picture is owned by August Busch, Jr.
My latest book began in a brewery. Not deliberately, of course. But in 1971, I first saw a Russian painting from the 1904 Louisiana Purchase Exposition, the St. Louis World’s Fair, hanging in the Visitors’ Reception Room of the Anheuser-Busch Brewery in St. Louis. This chance encounter with A. K. Denisov-Uralsky’s “Forest Fire” led me to what turned out to be an utterly wrong assumption: that Russian paintings had been exhibited in St. Louis in 1904 and then sold off to private buyers, one of them being August Busch, owner of the brewery. This particular historian thus began his work with a wrong answer; only after a good deal of curiosity and hard detective work did he discover that there was, in fact, a question: What had become of the 600 Russian paintings sent by the Imperial Russian Government to St. Louis in 1904? At that point, I became not just a Russian historian, but an American sleuth, engaged in a fascinating (and sometimes frustrating) search for lost Russian paintings. It led, in the end, not only to numerous unknown archives, but to an unknown subject: the sale of Russian art in twentieth-century America.

At first, I simply wrote letters to a number of St. Louisans likely to know about Russian art at the Fair. To my surprise, “Forest Fire” appeared to be the only Russian painting that came back to St. Louis at all. Additional research on published materials and newspaper reports on the Fair turned up a catalogue of the Russian Section of the Fine Arts Exhibit, which showed me precisely which 600 paintings, drawings, and sculptures had been on exhibit, and which had won awards (it turned out that the Russians won far fewer than their Japanese enemies). But where had they gone? There was no record of any sale in St. Louis, and published material indicated only that the collection had been shipped to America by a fur merchant named E. M. Grunwaldt (the Russian government itself abandoned plans to participate because of the Russo-Japanese War) and then moved to New York after the Fair closed in 1905.

Additional sleuthing turned up the art records of the entire Fair amid a pile of dusty and disorganized boxes in a third-floor attic of the St. Louis Art Museum. An American historian might have been delighted; as a Russian historian, I was ecstatic, being more familiar with published records than attic archives. I had stumbled on, or crawled my way to, a virtually unknown archive, which, in the words of the Museum’s director, “lies in storage, a vast, uncharted Arctic wasteland.”

My journey into this wasteland, armed with typewriter, note cards, and extra light bulbs, revealed the correspondence between Grunwaldt and Halsey Ives, chairman of the Art Department at Washington University and head of the Fair’s Fine Arts Section in 1904. Yet the Grunwaldt-Ives correspondence, while enlightening on Russian art at the Fair, did not indicate what had become of it afterwards. The Russians clearly experienced hostility and difficulties because of a pro-Japanese mood, and had not sold any paintings. In fact, Grunwaldt’s final letter to Ives from New York in the autumn of 1905 indicated that he still had all the paintings and was planning to exhibit them in New York as “Russia’s First Fine Arts Exhibition in America.” But what had happened then? According to the published proceedings of a congress of Russian artists held in St. Petersburg in the winter of 1911-1912 (and according to contemporary Soviet historians interested in such matters), Grunwaldt had shipped the Russian collection from New York to Canada, and
then to Argentina, where it was sold off to private buyers. But I found no evidence to confirm this rumor, only angry recriminations by Russian artists who had lost their paintings.

In the meantime I discovered that forty-two paintings by one of the artists, Nicholas Roerich (who also did the sets for Igor Stravinsky's *Rite of Spring* in 1913), had somehow found their way to the Oakland, California, art museum. They were later acquired by the Roerich Museum in New York, whose personnel were vague, secretive, and uninformed about further details. A letter to the Oakland Museum revealed that the paintings were given to the Museum at its founding in 1916 by a wealthy art patron, William S. Porter, who turned out, incidentally, to have been Jack London's surgeon. Porter had purchased them from the "Havens Gallery" in Piedmont, an Oakland suburb. A letter to that gallery was returned marked "Address Unknown." Frank C. Havens, I found out, was a wealthy Oakland businessman and civic leader at the turn of the century who did own an art gallery. But how had he acquired all the Roerich paintings?

At this point, I followed two dead-end leads and one very profitable one. The only Grunwaldt in the Manhattan telephone directory who spelled his name the same way turned out to be a pleasant doctor who knew of no relative connected with the Exposition, or Russia, or furs. Turning to *The New York Times* for 1906, I also discovered that Grunwaldt had, in fact, not merely exhibited his paintings in New York, but had tried to sell them at auction in March 1906; the Russian government had engaged a law firm to obtain an injunction and stop the sale. A letter to the firm, Coudert Brothers, resulted in a reply saying that, yes, they had a file card marked "Grunwaldt Paintings versus the Russian Government" but that, naturally, the file had long since been destroyed. Lawyers, I concluded, lack a sense of history.

The *Times* account suggested another lead. Grunwaldt had indeed sold off dozens of paintings in three evening auctions in March 1906, but the auctions had ended abruptly when the U.S. Collector of Customs for the Port of New York stopped the sale and ordered the paintings placed in a bonded warehouse for safekeeping. Grunwaldt had apparently neglected to pay the tariff required on all art objects entering the United States for sale. More letters to the National Archives and the Commissioner of Customs for New York turned up a much more extensive archival find: the Bureau of Customs Case File Nos. 24634 and 25892 which contained nearly one thousand pages of documents on the entire story of the St. Louis Russian paintings from 1904 to 1913. What had concerned me as a historian intermittently for several years turned out to have concerned three U.S. Treasury Secretaries and numerous Customs officials for six years, and even to have reached the desk of President Taft in the spring of 1912. The Customs case files revealed in great detail a bizarre and unknown story of the fate of the Russian collection, replete with lawsuits, swindles, tariff undervaluations, commen, and diplomatic protests.

To make a long story short, in 1906 a lawyer friend of Grunwaldt from California, one Henry Kowalsky, persuaded Grunwaldt to sign over to him, Kowalsky, ownership of the paintings for one dollar. Kowalsky had persuaded Grunwaldt that as an American citizen he was far better prepared to cope with mounting legal and financial problems than Grunwaldt, an alien. The wily Kowalsky promptly arranged with Customs to pay off freight and storage charges and ship the paintings to Toronto, Canada, despite Russian embassy protests in Washington. Here the paintings languished while Kowalsky made an agreement with Frank Havens to ship the collection to Havens' art gallery in Piedmont, California, sell off whatever they did not want, and split the profits. This scheme failed. For when the paintings got to San Francisco in 1911, Kowalsky and Havens began trying to swindle each other out of them. Kowalsky held the Canadian bill of lading (which naturally undervalued the collection) and Havens had the cash to pay freight charges, but neither man could clear Customs without the other.

Finally, in February 1912, weary and frustrated Customs officials had had enough. The entire St. Louis Russian collection was sold at public auction in San Francisco for $40,000 as "unclaimed merchandise"—to none other than Frank Havens. Having acquired by auction what he could not get on his own, Havens placed a number of works in his gallery and sold off the rest to wealthy friends. Consequently, many of these paintings are in California museums and private collections to this day (I have to date found about 100 of the 600 paintings).

Having unearthed records of the St. Louis Russian collection, I thought that Bureau of Customs archives might well contain dozens of other unknown case files on Russian art in America. In 1976-77, as one of the first Senior Fellows at the new Institute for Advanced Russian Studies, founded by Ambassador George F. Kennan, I went to Washington, D.C., to find out. At first the cupboard seemed disappointingly bare. The card index of Customs records at the National Archives was chaotic, apparently compiled over the years by several fiercely independent indexers determined
not to share the secrets of their systems with their successors. Items were filed by type of violation (e.g., undervaluation), country of origin, type of art object, all of these, none of these, or something more mysterious.

I found no reference to the case files I had already received copies of in St. Louis. Those cases I did investigate produced little or no material on comparable cases. I ultimately learned that a helpful National Archives employee had located the files on the St. Louis paintings only by leafing through some Customs correspondence for the period, and not through the index at all. I also learned that the most important sale of Russian art in America—of twenty-one old masters from the Hermitage in Leningrad to Andrew Mellon in 1930-1931 for $7 million—was not in Treasury Department records for a very good reason: Mellon himself at the time of his massive and secret purchases was the U.S. Treasury Secretary.

State Department records were better indexed and more productive. They offered nothing about Grunwaldt or Havens, but produced reams of material on the painter Roerich. After the Russian Revolution, Roerich emigrated to America in 1920 and became much more than a painter. A one-time theosophist, he now wore Tibetan prayer robes, claimed that his paintings had healing powers given him by the wise men of all ages now living somewhere in the Himalayas, and bilked well-meaning but gullible Americans out of thousands of dollars. The British suspected Roerich of being a Soviet agent, an Indian nationalist, or both, and denied him a visa to India in 1931. The State Department found him a nuisance, and only the patronage of Agriculture Secretary Henry Wallace sustained him in the 1930's, when he organized the "Roerich Peace Pact" to protect museums in time of war.

Roerich finally settled in India one step ahead of his creditors and the Internal Revenue Service, which found his museum guilty of tax fraud. In Roerich's case, the archives revealed that he was not simply a Russian artist, but a con artist whose income derived from both wealthy Americans and the Soviet government. This picture of Roerich was confirmed when, to my astonishment, I discovered that his patrons from the 1920's were still alive and well in Florida—and willing to talk about their past.

The Roerich material helped me realize that behind the buying of Russian art in America was an extraordinary sales campaign by both the Imperial and Soviet governments. As my research progressed, it became increasingly apparent that Russian art was a valuable export commodity intended to earn credit—economic and political—in the United States, especially in the years prior to American recognition of the U.S.S.R. in 1933. A crucial figure in this campaign turned out to be Dr. Armand Hammer, now the multimillionaire owner of Occidental International and M. Knoedler & Co. galleries. I knew of Hammer as a pioneer in early Soviet-American relations, a shrewd trader who had gone to Russia in 1921, obtained concessions to mine asbestos and to manufacture pencils, and then left Russia around 1930 with truckloads of precious Russian art objects—icons, chalices, paintings, and jeweled Fabergé treasure—which he sold through department stores in America (beginning with Scruggs, Vandervoort & Barney in St. Louis).

It would rather be in Philadelphia: Nicolas Poussin's "Birth of Venus" (c. 1638). Purchased from the Soviet government for $50,000 in 1932 by the Philadelphia Museum of Art.

WHAT THE State Department files (especially those of its little-known Office of Counselor, the interagency and intelligence branch of the 1920's) indicated was that Hammer's Russian ventures were part of a larger effort by Soviet-sponsored groups to open up Soviet-American trade. Among them were the 1919-1920 New York "Bureau" of Ludwig Martens, which employed Hammer's father, Julius; the Hammers' own Allied American Company; and after 1925, the Soviet trading agency in New York, known as Amtorg. Through such agencies, the Soviet government in 1924 embarked on a remarkable campaign to exhibit and sell Russian art in America.

The Hammer family was obviously involved in this campaign from the outset, and acted as a go-between for Soviet Commissar of Trade Anastas Mikoyan and New York art dealers such as Joseph Duveen. Hammer's Moscow offices in the 1920's, interestingly enough, were
located in the building of Nicholas II's official court jeweler, Fabergé, and the "Hammer Gallery" in New York later became a crucial outlet for Soviet art. But Hammer himself was reticent on these matters when I spoke with him; he preferred to show me a photograph of a painting from the St. Louis Russian collection which he bought at a California estate sale in 1975 and which now hangs in his Moscow apartment, the only painting of its type known to have returned to Russia. Hammer's now rare autobiography _In Quest of the Romanov Treasure_ (1931) was equally vague on details of how Russian art was sold in America during Stalin's first Five-Year Plan (1928-1932). I therefore decided that the best way to understand the selling process was through the buyers.

I began with Lilian Pratt, whose magnificent collection of Fabergé jewelry, mainly from the family of the last Tsar, Nicholas II, is now in the Virginia Museum in Richmond. Mrs. Pratt had made most of her purchases from Hammer, starting with his great sale of the "Romanov Treasure" at New York's Lord & Taylor store in 1933. A research trip to Richmond revealed that she had also been a historian's dream. She had saved everything, including the sale catalogue and all price tags of items she bought.

In addition, "Hillwood," the estate of Marjorie Merriweather Post in Washington, also contained scattered evidence of Hammer purchases. All of this suggested that Hammer was helping the Soviet government in a much larger effort to sell Russian art abroad to raise hard currency and help finance industrialization.

Marjorie Post bought Russian art largely because her husband, Joseph E. Davies, was the U.S. Ambassador in Moscow in 1937-1938. Davies' papers at the Library of Congress proved particularly interesting to me, since they recorded in detail his own purchases of Russian art (mainly icons, religious artifacts, and socialist realist paintings) while on duty. Many of these diary entries were left out of his effusively pro-Soviet _Mission to Moscow_ (1941), as were any passages critical of Stalin's regime. Davies, more than his wife, had a passion for buying Russian art and was able to do so just before the Soviets ended a decade of massive selling of art to foreigners.

The Davies Papers helped convince me that Russian art sales were most intense in America in the 1930's, not the 1920's, and part of a traditional Russian attempt to promote trade with the West. They also showed that the Davies were unwitting recipients of Russian art trea-
Back in the U.S.S.R.: Nikolai Kasatkin's "Newly Born—Recuperating." The only World's Fair painting known to be in Russia, it hangs in the Moscow apartment of Armand Hammer.

Sure intended to cultivate their political friendship, Stalin earned little hard currency from Davies, since he paid for his art not with dollars but with black-market rubles acquired by diplomatic pouch from Berlin. But the friendly attitude of both book and film version of Davies' mission more than repaid Stalin for his efforts.

All of this showed me that the one well-known case of Soviet art sales, Andrew Mellon's Hermitage purchases, was only one example of massive Soviet art sales in 1928-1933, public and private. In Washington I learned that the only reason Mellon's purchases finally became known in 1935 was that he tried to claim them as a charitable deduction on his 1931 income tax return, a strategy that the IRS under the Roosevelt administration later found imprudent. The key documents on Mellon's purchases from the Hermitage thus were not in the National Gallery (donated by Mellon in 1937) but at M. Knoedler & Co. in New York (Mellon's dealer in the purchase) and at the U.S. Tax Court.

Knoedler's was most generous in making the trans-Atlantic cable traffic of 1930-1931 available to me, but the tax records were another matter. After endless telephone calls and stories of missing or burned records, I finally found the full stenographic transcript of Mellon's tax trial in the offices of a most cooperative judge at the Tax Court—who also turned out to have sat in at the trial! In addition, I discovered that the paintings sold to Mellon were later (in 1932) offered to the Philadelphia Museum by either uninformed or inquisitive Soviet Amtorg officials. Fortunately for them, the Museum could only afford the $50,000 they paid for Nicholas Poussin's "Birth of Venus" and not the $1.7 million Mellon had paid for Raphael's "Alba Madonna." Museum and dealer archives in Philadelphia and New York also confirmed the picture of an increasingly desperate Soviet government willing to sell off its Western masterpieces and religious art to earn money abroad. Thus did the wealth of American "capitalists" find its way to Russia during the Depression.

Archival discoveries and interviews with many people involved thus led to a reformulation of the culture exchange of Russian art and American money in terms of the seller, more than the buyer. Hermitage officials wrote me that they have no records on these remarkable sales, and that they are probably right; the final story lies interred in inaccessible Soviet foreign trade archives. Yet the accessible, but unused, papers of American buyers make the picture clear: successive Russian governments sold Russian art in America to encourage trade and pay for imports; both American and Russian emigres were employed to manage these sales; the St. Louis debacle of 1904-1912 marked only the abortive beginning of a campaign to sell Russian art in America, which reached its peak in 1928-1933, and ultimately earned tens of millions of dollars.

One is tempted to close with neat conclusions, and yet the historian's craft is more elegant in its literary result than in its archival wanderings. To discover an archive and an area of historical significance is not to foreclose things, but to enlarge the scope of both conclusion and confusion. At present I await the fruits of an old Freedom of Information Request from the FBI which promises even more previously unknown material. It can only further enlighten us about a fascinating level of Soviet-American relations in the twentieth century. But it may also demonstrate that history remains not only an argument, but a search, without end.
Quadrilogue on Quarks

The quark is a theoretical subnuclear particle with the giddiness of the Mad Hatter and the coquetry of the Cheshire Cat. It exists in a dizzying, looking-glass world of quarks and antiquarks, matter and antimatter, where things get smaller and smaller and nothing is quite what it seems. Here we eavesdrop on a conversation in which four scientists wrestle with the ineffable—the amazing world of subatomic physics.

The Participants:
John W. Clark, Washington University professor of physics
Johann Rafelski, a co-worker of Clark’s who has spent the last three years at Argonne National Laboratory; presently at the European Organization for Nuclear Research (CERN)
Helga Rafelski (Johann’s wife), a physicist at CERN also
Jeff Winston, a WU electrical engineering graduate and now a WU medical student, who has worked with Clark and Rafelski on problems in brain physics

GLOSSARY
Quarks:
1. Hypothetical constituents of strongly interacting particles (hadrons) like protons, neutrons, and mesons. Difficult or impossible to isolate in nature. Term introduced by Murray Gell-Mann, borrowed from James Joyce’s Finnegan’s Wake: “Three quarks [quarts] for Muster Mark.”
2. German word meaning a kind of mild cream cheese (see flavor, color, below) or (figuratively) trash.
Gluons:
Particles exchanged between quarks, responsible for their mutual interaction.
Flavor:
Quantum label distinguishing quark types which must be introduced to explain experimental results. Four quark flavors so far identified: up-ness, down-ness, strangeness, charm. There are indications more flavors may exist (truth and beauty?).
Color:
Additional quantum label introduced to tidy up the quark theory. Each flavor of quark is supposed to come in three different colors: red, yellow, and blue. Hypothesis of color symmetry demands that quarks combine to form systems exhibiting no net color and thus forbids the extraction of free quarks from hadrons.

Johann: Let’s talk about the subnuclear world and our understanding of the proton, neutron, and other so-called elementary particles which have been discovered in the last few decades in laboratories around the world. While initially the list of elementary particles was rather small, it has increased so rapidly in the last fifteen years that many people believe that a new approach to the subject must be taken, an approach in which a simpler substructure may be found within this elementary world. Such substructure has been proposed by theoretical physicists to unify the zoo of elementary particles in the same way electrons, protons, and neutrons have unified our knowledge of the hundred or so chemical elements. An atom of any element ... like hydrogen, oxygen, iron ... is made up of a certain number of protons, neutrons, and electrons in a way we understand pretty well today. This systematic approach to the subject has led to an understanding of atomic, molecular, and chemical worlds. Guided by such considerations, it has been suggested that there might
be a more fundamental structure to the hundred or so heavy elementary particles that have been discovered. Maybe they are made of a few more elementary particles called quarks.

Clark: I take a rather skeptical view towards the whole game. Perhaps you can tell me how many quarks there are?

Johann: You have asked a very complicated question. We had to start with three quarks, which had the disadvantage of possessing unusual electrical charges: one-third or two-thirds of the electron’s charge. Recent experiments indicate the existence of a fourth quark.

Clark: There is something called flavor.

Johann: Flavor is the name given to distinguish the four basic quarks. Physicists like to give memorable names to simple things and the fourth flavor is called charm.

Clark: There are also antiquarks.

Johann: We do not count them as separate entities. They are just mirror images; that is, they are the same entities but with reversed properties, like opposite charge.

Clark: There is something called color.

Johann: Several experiments require quarks to have an internal structure. It’s like the spin of the electron. Electrons are electrically charged and further they have internal structure, as shown by their spin, which we often like to think of as their rotation around an axis. Quarks also have charge and spin. Further, they might have some other internal structure corresponding to “color.” Colored quarks, it turns out, could then carry charges in units of the electric charge. There is a subtle difference between color and flavor: we may find more flavors of quarks but we don’t expect to find more colors.

Clark: How many primary colors are there?

Johann: Each of the four quarks can come in three primary colors.

Jeff: Now there are twenty-four quarks.

Johann: You can also say that there are twenty-four states of one quark. It is like one gem with twenty-four sides!

Clark: Maybe you will have to multiply by another three later. So, there are ten or more.

Johann: Let’s count them again. The point really is that one should stick not to theory but to experiments. Experiments tell you the following: there are three very well established quark flavors and there is very likely a fourth flavor—charm. And color helps to make the quark picture even more successful.

Clark: Why don’t you stick with the original three quarks?

Johann: It's like an ever-growing picture. Fifteen years ago, three were enough. You wish to classify the proton, neutron, and all other elementary particles as in the Mendeleev table of elements. To classify them, you will need all those fancy quarks.

Jeff: And we come up with an “atomic” model in which everything is simplified. So when you take a collection of quarks of a specific number and pattern, you create a new particle, and if quarks are put together in a different way you create a different kind of particle. If the model is good, we should be able to find each of these subatomic particles in the laboratory.

Johann: In fact, at the time the original quark model was conceived, there were only very few particles still missing among those which could be built with it. One would imagine that a simple picture like this would have been discovered before finding all those subatomic particles, but the three quarks were introduced when almost all the particles they can create were already discovered. Fortunately a few were still missing. It was a big success of the model that the predicted structure and properties of these few particles were later confirmed by experiment. It was similar to the story of Mendeleev and the table of elements: he could make predictions about a few elements which had yet to be discovered. So you see, that if it isn’t known how nature works, you must have almost all of the pieces of the puzzle to put it together in the right way.

Clark: How does the electron relate to the quark?

Johann: There has been some speculation that in fact there could be a relation. Both quarks and electrons are fermions, which are particles subject to the restriction that two of them of the
same type, say two electrons, can't be
doing the same thing at the same time.
Quarks and electrons both have charge
and mass and neutrinos seem to interact
with both in a similar way.

Helga: Do you want to suggest that
quarks are members of the same family
as the electron?

Johann: At this level, yes. But I must
warn against taking this further. Origi-
nally, the proton looked much the same
as an electron, except for its opposite
charge. Then we discovered that they
are very different. A quark is different
because it has the property of being
able, with others of its kind, to make a
proton or a neutron. It is not believed
that electrons can make a proton or
neutron. So quarks are somewhat differ-
ent although they have many properties
in common with electrons.

Jeff: Is it possible that an electron is
contained with the quarks in the proton?

Johann: Most likely not. It is very diffi-
cult to confine a small, relatively light
particle in the sphere that is occupied
by the quarks. A quark may not be
"larger" than the proton. The size of a
proton is very small compared to the
elementary length we assign to the elec-
tron—four hundred times smaller.

Jeff: Then maybe another subatomic
particle is contained in both the electron
and the quark.

Johann: Many experiments have been
made to find a subatomic particle of the
electron and none has been successful.

Clark: We haven't been able to break
up the proton either.

Johann: But we have been able to find
out that the proton is made out of
quarks, although we have not been able
to separate the quarks that make up the
proton.

Helga: But how has it been found that
protons are made of quarks?

Johann: In two different ways. The first
is analogous to atomic theory. We have
a table of elementary particles—data on
their properties and their mutual inter-
actions. Then, we find that the simplest
way to unify all this information is to
say that the heavy elementary particles
are assemblies of a few quarks and that
their properties are suitable sums of the
properties of the few quarks, in the same
way as the properties of atoms and
nuclei. . . .

Helga: . . . are generated by the prop-
erties of electrons, protons, and neutrons
in interaction. But does that mean
quarks are real particles, as real as elec-
trons?

Johann: No, there is no need at this
stage for quarks to be real particles like
electrons. The quark may be just an en-
tity carrying electric charge, color, and
flavor, that can exist only in combina-
tions known as the proton, neutron, etc.
Such things, called quasiparticles, are not
new. They are prominent in solid-state
science. A famous example is the Cooper
pair, made of two electrons of opposite
spin, that is responsible for supercon-
ductivity phenomena.

Helga: Is there any experimental evi-
dence that quarks are real particles?

Johann: Yes, the second way to see that
protons are made out of quarks involves
dynamical processes, collisions among
particles. Two kinds of experiments are of
great relevance here. In the first, we
scatter electrons or neutrinos from pro-
tons and neutrons and it looks as if they
really scatter from things like quarks in-
side the protons and neutrons. In the
second, we smash positrons into elec-
trons and see indirect signs that colored
quarks play an essential role in the col-
lision process.

Helga: If you smash positrons into elec-
trons, don't you get out a lot of other
particles?

Johann: Yes, When an electron smacks
into an antielectron, matter annihilates
antimatter, producing a new form of
matter-antimatter. It's proposed that one
or more quark-antiquark pairs are pro-
duced in the first phase of the collision
process. However, with presently realiz-
able collision energies, these pairs cannot
exist long enough to be observed be-
cause of the law of conservation of ener-
gy. What we find as the end products
of such experiments are only the ready-
made collections of quarks in the form
of protons, neutrons, pions. But we begin
to see in the pattern of how these parti-
cles have been created, their origin in
"virtual" quark-antiquark pairs.

Helga: So you would say that a quark-
antiquark pair is formed in an electron-
-
Quadrilogue on Quarks

seen by the experimentalist. But how is this compatible with such properties of quarks as their possible fractional charge?

Clark: If the quark charge were a fraction of the electron charge, as in the model without color, a quark could not decay, because total charge must be conserved and all other particles are integrally charged. One might imagine that these quarks are made singly in cosmic ray bombardment of the earth, or in some early stages in the history of the universe at which energy was more concentrated than it is now. Such single quarks, if rare, would have essentially no chance to combine into protons, neutrons, mesons, etc. Thus, if we believe in fractionally charged quarks, we must search for them everywhere. Scientists have even looked for them on the moon, without success. But very recently, a Stanford research group has reported evidence for the presence on superconducting metallic spheres, of charges plus or minus one-third of the electron charge.

Johann: The possibility that fractionally charged quarks have actually been isolated is an exciting one and the scientific community is anxiously waiting for confirmation. But, Jeff, suppose somebody suggested that atomic nuclei are made of protons and neutrons, yet no proton or neutron had been found?

Jeff: If the model worked, I would say there must be a very strong force binding the protons and neutrons. Maybe it’s the same with quarks. If they are not observed singly, there must be something very strong holding them together.

Johann: Exactly! In fact, the strong binding of quarks suggests the existence of other elementary particles, if we apply our past experience. Theorists have tried, with some success, to explain each fundamental force in terms of an additional type of particle which is exchanged between the bodies that feel the force. It’s sort of like a boy and girl exchanging a ball. Interaction is created between the boy, who throws the ball to the girl, and the girl, who throws it back at the boy. If quarks attract each other in such a way, we must find the ball. The “ball” that glues quarks together is called a gluon.

Jeff: What is the mass of a quark?

Johann: There are two possible answers. Some physicists believe that the sum of the masses of three quarks is nearly equal to the mass of the proton. There is another point of view where the quark’s mass can be much larger. By analogy to what happens when neutrons and protons bind together to form a nucleus, you may say that quarks are very heavy and there is something that takes away their mass when they bind together to form a proton. This also explains why you cannot tear apart such a “bag” full of quarks. If a quark could be taken out, it would weigh very much—tens or hundreds of proton masses. We are unable to supply that much energy in present-day experiments because present proton and electron smashers have barely fifty proton masses of energy available to make a quark pair. If quarks are heavier than ten or twenty proton masses, none could yet have been made in the laboratory.

Jeff: I’m still snagged on forces. Aren’t there three known basic forces: electromagnetic, gravitational, and nuclear?

Johann: Once you explain protons and neutrons in terms of quarks, the nuclear force is like the van der Walls force between atoms. It is the unscreened remainder of the basic quarkic force. There is another force called the weak force which is responsible for the decay of the neutron into proton, electron, and neutrino. So there are four forces and perhaps the least understood is the quarkic force.

Helga: You can categorize the forces by the distance over which they act. The electromagnetic force acts over long distances and the weak force over very, very short distances.

Jeff: Now everything seems to be classified in terms of forces.

Johann: There is not a one-to-one correspondence between types of particles and forces. A given basic interaction may be shared by more than one family of particles.

Jeff: Every particle we know is responsive to one of the forces.
**Helga:** At least one of the forces. Otherwise, we wouldn't know about it. Quarks are the only particles subject to all of the known forces.

**Jeff:** I'm still trying to get some correspondence between gravitation and mass, between electromagnetic forces and the electron, and between the weak force and the neutrino. Is some specific subatomic particle responsible for each force?

**Johann:** Yes, for electromagnetic forces, in which case the exchanged particle is the photon. With the weak force, the answer is "perhaps"; there is no known subatomic particle responsible for that force but most speculations are that one exists. We do not understand the quarkic force, but it is proposed that "gluons" intermediate it. While there is no evidence for the so-called graviton that may be responsible for gravitational force, theoretical physicists like that idea very much. Further, one associates a charge, in a general sense, with each elementary force.

**Clark:** Can anything useful be said about the nature of these so-called gluons?

**Johann:** Well, quarks must be bound together by something, by some kind of glue. Suppose we glue two pieces of wood together. If we apply enough force, we can break the wood apart again (maybe not into the original pieces, but we can break it up). Just imagine now that we are using rubber glue. You glue two quarks together with rubber glue.

**Jeff:** With rubber glue, there's some elasticity, so that the quarks can separate and come back together again but apparently can't fully separate.

**Johann:** So, the rubber must grow stronger and stronger as we try to pull the quarks apart.

**Jeff:** Force increases as distance increases.

**Johann:** What is such a system called?

**Jeff:** A spring. As the distance increases, so does the force, in the opposite direction.

**Johann:** Usually when we pull hard enough, the spring breaks. But just imagine that quarks are held together by springs, the gluons. The more I pull the quarks apart, the stronger the force that holds them together.

**Helga:** That's just a nice picture.

**Johann:** All such pictures have the disadvantage that they're not reality. But they are the ideas that theoretical physicists must play with to come up with a theory which comes closer to the underlying reality. That is the way we work in physics.

**Clark:** We somehow impose our view of the world on nature at this level and if nature doesn't respond, we adjust our view by introducing some new feature which may or may not have much to do with nature.

**Johann:** Our approach is basically trial and error. If something new is discovered or a theory breaks down when confronted with a new experiment, an improvement in our understanding can be achieved. That is a fact of life about science.

**Clark:** The hope is that the adjustments don't make the theoretical structure much more complicated.

**Johann:** The question of what is complicated depends on one's experience with the subject. The way to adjust has been so far to introduce a more fundamental structure. Looking back into history, the ancients said the whole world was made of four elements—fire, water, air, earth—and the quintessence. It was a simple but hardly a fundamental picture.

**Clark:** Probably, the greatest success was the atomic model. The most was explained in terms of the least. We took just three kinds of particles and we got 106 elements out.

**Johann:** Also molecules, solids, etc. If you would disregard some ten or twenty experiments, you could say that the simplest quark model is also very successful. It explains nearly all the known particles in terms of the three original quarks.

**Clark:** But the amount of experimental information we have about electronic atoms is vastly greater than that about quarkic "atoms."

**Johann:** Because electronic atoms make up the environment in which we live. But for beings in a spaceship powered to nearly light speeds by some kind of drive which uses subnuclear energy, or for creatures living inside a neutron star, the environment would be very different.

**Clark:** Not ours.

**Johann:** True, not ours. Maybe, therefore, science should proceed in a new direction.

**Clark:** I wouldn't say that. I think the concept of quarks has to be pursued. But I think every little increment of knowledge will cost us very much in effort, money, and energy.

**Johann:** Would you rather pursue another direction?

**Clark:** I think we have to continue. This is the real frontier. We must push ahead or we wouldn't be real human beings with the desire to understand nature. It might be that the difficulties grow and grow, but we shouldn't let that stop us.
A Gallery Of Trustee Profiles

August A. Busch III

AUGUST A. BUSCH III is a man whose work is both his business and his hobby. He harbors no illusions about the percentage of his day which it consumes. He does not even resent it. He is what he is: a man who is head of a multi-billion-dollar business and who has worked in that business for as long as he can remember.

He cannot recall having yearned to be something else: "I have been here since day one. When I was ten, eleven, fifteen, I used to be here with my dad, following him around, exploring, later working."

There is a sense about him of a lost childhood, one he never allowed himself. After private schooling in St. Louis, he went off to the University of Arizona. "I really enjoyed it," he says, yet he quit after two years to go to Siebel Institute of Technology in Chicago, a brewing school concerned with the industry into which he was born and bred. The next year, at age twenty, he entered Anheuser-Busch full time with a job in the Malt House. Today, at forty, he is chairman of the board and president of Anheuser-Busch, Incorporated, and a director of First National Bank in St. Louis, First Union Bancorporation, Laclede Gas Company, and St. Louis Union Trust. He is chairman of the U. S. Brewers Association, Vice Chairman of the National Center for Resource Recovery, and a director of the United States Chamber of Commerce. He is actively involved in several civic, cultural, and educational institutions, including the United Way of Greater St. Louis, the Boy Scouts of America, St. Louis Council, Civic Progress, the Wharton School Board of Overseers, and the Washington University Board of Trustees.

"How much you give of yourself to home and family shouldn't be measured in time," he says. "It should be measured in the quality of that time. When I am away from business there is nothing else for me but Ginny and the children." Together the family rides horseback, goes snowmobiling, motor biking, or shooting. Busch and his wife also play tennis. "She beats me," he adds.

He feels that times have changed since he was a child, contending that although the elder children—a son thirteen, and a daughter twelve—do accompany him sometimes to the office, it is not possible for them to be as involved and interested as he was. "Besides," he says, "they're much too busy with school, too busy being children." His ambition for them, however, is clear. "I believe that I should give them a good education and an understanding of the fundamentals of life. You have to make sure that your kids talk to you, about anything—good or bad. That's all a parent can really do. From there, the children have to take it."

He says that he would insist his children at least try college, not just because he believes a college degree is necessary but because he believes that those years are the happiest of a person's life.

"When you consider the whole span from childhood through high school, you find it is pretty regimented and the material is reasonably dry. Then you come to a time when you are on your own. You have a broad selection of material and you ought to be doing what you're interested in. You really haven't got a boss then; you are your own boss. It is an exciting four or six years. From there it's back to regimentation and responsibility."

What prompted him to cut that period in his own life back to two years? "The decision to come down and get active in the business." It is likely a decision in which he had little choice, for his lifestyle and his business style seem to brook little nonsense. He is direct, decisive, and forthright, and he admires men of similar ilk. That is why he thinks Washington University is in capable hands under the board chairmanship of Maurice (Dude) Chambers, chairman of the executive committee of Interco Incorporated. "What makes him a great fellow is that he is right to the point and no foolishness. He is a perfect example of a progressive, straightforward, dynamic leader who makes things happen. Charlie Thomas before him was the same."

Busch believes that Washington University has unique assets: a location that is good, a campus that is excellent, ample physical facilities, sound understanding and support from the local community, an active, interested, working board, and a cadre of administrators and academics who in many areas surpass most other universities in this country.

"From my limited experience on the board, I believe that I am going to find Washington University trusteeship very interesting. I am impressed that the University recognizes that it must do things, as any organization must, to survive, that it understands the nature of its market in the next five to ten years and has analyzed what share it might expect. That is sound management.

"I am also very impressed by the student representation on the board. These young people are articulate, forward-looking, and have their feet on the ground."
John F. McDonnell

John F. McDonnell is a quiet, studious-looking young man who might have been a college researcher had his path in life been charted almost since the year of his birth. It was in 1939, when John was one, that his father, James S. McDonnell, left Baltimore, Md., where he had been an engineer with the Glen L. Martin Company, to begin his own firm in St. Louis.

By the time John was 16, it had become obvious that McDonnell Aircraft Company was on its way to being one of the giants of its industry and that there would be a place in the company for John. That summer he went to work at McDonnell. He has not gotten away from it in the more than twenty years since.

"But I suppose that's not really any different—but from any young man who very much respects his father and strives to follow in his footsteps," he says with a soft smile and a twinkle in his eye. He has fielded a question that bore a slight trace of impertinence with a gentle chide. His reply seems a characteristic combination of good humor and tolerance with firmness.

From Country Day School in St. Louis John went to Princeton to study aeronautical engineering. He graduated in 1960 with a bachelor of science degree but stayed for two more years to complete the master's degree. During this period he met and married Anne Marbury. They came back to St. Louis in the spring vacation, and John plays tennis for the program and learned to fly through the Air Force ROTC, but when he learned that because of his eyesight he could not become an Air Force pilot, he dropped the program and learned to fly through private lessons. Although that seemed essential, it is obvious that his life will be more involved with building airplanes than flying them.

Douglas Corporation.

"I am still learning a good part of my new job because, although the fiscal units still report to me, my responsibilities have been broadened. I really made my decision to enter the financial area of the company largely as a result of graduate work I took at Washington University."

When John came back to St. Louis in 1962, he began night courses in the M.B.A. program. "From an academic standpoint I probably did it wrong, but from my standpoint I made the intelligent decision to take the courses that interested me first. For three years I took courses I believed I needed at the rate of two a semester. Then I faced the prospect of taking all of the things I had avoided earlier which were requirements, so I just quit. I figured I didn't need the degree," he says with a mischievous smile.

The same quick smile answers the question about what the future holds for him. "I really don't know. I take one step at a time. I've always talked my major decisions over with my father and I think that I made them with his approval, but he has not offered advice unless asked. I enjoy working in the company and although my wife and I liked living in Los Angeles, St. Louis is my home. I feel about it much as my father did when he established here. He believed that the middle of the country would be the growth area during the third century of the United States."

"That is one of the reasons I believe strongly in Washington University. I am enthusiastic in supporting the Chancellor's desire that Washington University be recognized as one of the top universities in the country. Clearly the East Coast has many fine institutions and the West Coast has some, but the middle section of the country has lagged far behind. I think that one of the ways to insure its overall progress is to develop here first-rate institutions of higher learning. In that, Washington University has led the way, and its quality must be maintained."

As the youngest of the young members of the University's Board of Trustees, John McDonnell feels that it behooves him to be more an observer than a participant for the time being. He has recently been appointed to the investment committee and has served for more than a year on the student affairs committee.

He calls that appointment "certainly one of the fun assignments on the board," observing that he is reminded of his age by the energy of the students he comes in contact with.

He is, however, no stranger to the energy of the young. His own children are Jeffrey, 14; Catherine, 13; Alicia, 10; and twins Holly and Jeanne, 9.

John McDonnell's work day, which begins at 8:15 a.m., is elongated by work he takes home and an inexhaustible supply of business-related reading. He is a trustee of Country Day School and he and his wife are directors of a very active adult study program at Ladue Chapel—a program they have participated in for more than ten years. "These courses have usually been responsible for the only recreational reading which I do," he remarks.

As a family, the McDonnells ski every spring vacation, and John plays tennis frequently. At Princeton, he took Air Force ROTC, but when he learned that because of his eyesight he could not become an Air Force pilot, he dropped the program and learned to fly through private lessons. Although that seemed essential, it is obvious that his life will be more involved with building airplanes than flying them.
George Kassabaum

George Kassabaum is an architect.

He has known what he wanted to be since he was twelve. He began his career as a designer and teacher of design. But his father was in YMCA work and from his home, young George must have learned a sensitivity to and concern for people. He says, "It quickly became apparent that I really got more satisfaction out of dealing with people than with things."

His view of architecture as a people-oriented profession has formed the fabric of his life and work. That is the unique talent he brought to Hellmuth, Obata, and Kassabaum that helped build one of the world's leading architectural firms. It is the kernel of his strivings for his profession and his leadership of it. It is the essence of what he communicates to young architects at Washington University. And it is the basis of his concern for Washington University today and of his contributions to its future. George Kassabaum is a believer in environmental planning addressed to the broad concerns of people—individually and collectively.

Of the University he has been associated with for thirty-five years as a student, a faculty member, an alumnus and, now, a trustee, he says, "Washington University has occupied a very warm place in my life. I am very proud of it. I believe that Bill Danforth has improved the image of the University not only in St. Louis but nationally. But the University has a unique problem in attracting students to hone intellectual and philosophical skills within a broad society. He says, "I believe that one of the challenges facing the University is to create a better social atmosphere for its students. You learn the ideas of great men of the past in the classroom, but it is in social contacts that you learn why you think what you think and how to apply your values to the world around you."

He knows that buildings do not accomplish this, but he believes they can facilitate it. "We have designed buildings to force people of different disciplines to come into contact with each other and just by doing that, they experience a certain amount of growth. Coming from the architecture school where you really have to fight to become active in campus affairs, I have a sense of the isolation which can occur and the benefits of avoiding that. The University should be, as much as possible, a microcosm of a macrocosm." He would like to see at WU more places where people can meet each other—better athletic facilities, more spaces where social gathering occurs naturally.

Born in Kansas and reared in Oklahoma, Kassabaum came to St. Louis to study architecture. World War II intervened but he returned to study and to graduate in 1947. He was headed back to Kansas when he was invited to remain at WU to teach. After four years of full-time teaching, he joined the firm which in 1955 became HOK. At that time there were six employees. Today he is president of the firm, which now employs some 500 persons. Its headquarters on the top floors of the new Boatmen's Tower overlook a revitalized downtown St. Louis, in which many of the new buildings have been designed by HOK.

The firm's growth, says Kassabaum, was planned and purposeful. "We were rocking along in the late 1950's doing the things that architects did, when we had a chance to do a project for IBM in California. After having been selected, we discovered that we were almost eliminated as being too small. We then consciously developed a master plan for growth, just as we urged our clients to plan ahead. The curse of the architectural business is its peaks and valleys. We decided to avoid that by expanding in service and geography."

In that expansion, Kassabaum's major concerns have been project responsibilities (dealing with clients and contractors from design through project completion) and general management of the company. He points out that these are services only recently recognized as important to the profession. "I think architecture lost many of its good students because the 'not so creative' were steered into engineering or business. Fortunately, that is no longer true."

Kassabaum has taken as a professional mission the broadening of the profession's concern for people and society. He served as president of the American Institute of Architects in 1968-1969 and is currently Chancellor of its College of Fellows. His leadership of AIA during that turbulent year—when the profession experienced the same unrest that universities did—helped establish a working relationship between students and the profession. The year also, he says, began "to jar the profession out of its mold of specialization." He continues to pursue that theme as a seasoned leader of the profession and an occasional lecturer on campus.

When he taught at WU full-time, he met a young graduate of the University named Marjory Verser, who was working on the campus. They were married and are the parents of three children: Douglas, Ann, and Karen.

Today, although Kassabaum must wrestle with the problems that go with HOK's world-wide operations (its eight offices stretch from New York to Anchorage), he still finds time to serve his community through memberships on various boards. He also remains active in his professional society on a national and local level.

Asked which HOK building is his favorite, he admits a fondness for a small job—Warson Woods School, where his children were educated. But his pride brims over when he speaks of the new Air Space Museum of the Smithsonian Institution between the Capitol Building and the Washington Monument. "You seldom expect to create a building which everyone likes, but this seems to be one," he says.
I t came as no surprise that Washington University's alumnus and trustee Judge William H. Webster was chosen by President Jimmy Carter to be head of the storm-battered Federal Bureau of Investigation. Nor was it surprising that this nomination was confirmed quickly by the Senate. William Webster is a gentle, fair man with an impeccable reputation for honesty.

But why would such a man chose to undertake the task of restoring to brightness the FBI's tarnished shield? Judge Webster answered that question for reporters saying, "I am an old Navy man. I heard the bosun's pipe and responded."

For William Webster it does seem that simple. He believes in service in the sense of the word explained by Senator John Danforth when he introduced his brother, Chancellor William Danforth, at Man of the Year ceremonies on campus in January. Senator Danforth said, "I cannot overemphasize how strong this commitment to serve others has been. For many people, service is an additive—something to be done after hours, when the more immediate needs of self are satisfied. For Bill, service is the immediate need. It is the driving force. It is the purpose which justifies the total investment of all the talent he has to offer."

This is not the first time that Judge Webster, who leaves a position as U.S. judge of the Eighth Circuit Court of Appeals, has answered the "bosun's pipe." Last fall he told WU Magazine Editor Frank O'Brien, "Observing the student protest in the late 1960's had much to do with my decision to go back into government service from private practice and to accept a position on the bench. A lot of people were saying then that the system didn't work. I believe that it does work and I saw service on the bench as a way of helping to keep it working."

That is what William Webster is once again undertaking: the task of helping to preserve a system in which he has an ultimate faith.

We stand again with Senator Danforth, who concluded his introduction by saying, "I am very proud of my brother Bill ... I am very proud, but I am not surprised at all."

Washington University is very proud of Bill Webster, too, but we are not surprised at all.

O n December 14, Frank O'Brien, editor of this magazine for the past sixteen years, died of a heart attack. He was fifty-seven and had been the victim of several previous attacks. His death leaves a void that cannot be filled. Someone will succeed him, but no one can replace him. He too was a gentle man, fair and honest, scholarly, and of unimpeachable taste. Under his editorship Washington University Magazine came of age. It won the Robert Sibley Magazine Award in 1962, the top award for college and university publications, and countless other national tributes and recognitions. It was a reflection of its editor.

Within a few days of Frank's death, the tribute to him which follows arrived in the mail from former Chancellor Thomas H. Eliot. It speaks for all of us.

"In December, shortly before Frank O'Brien died, I received the last Washington University Magazine edited by him. It included his tribute to Professor Feenberg, heartfelt and heartwarming. I only wish that I could now write about Frank with the grace and style and human warmth that characterized whatever he wrote and what he was."

"The Magazine, old-timers will remember, was born during Ethan Shepley's term as Chancellor. Within a short time Robert Payton, its first editor, had given the University an attractive, respectable journal. Then he made a further significant contribution by recruiting Frank O'Brien as his successor."

"Frank was a great editor. As such, his most distinctive qualities were imagination and taste. He found on the campus or within the University family, broadly defined, subjects for articles that made the Magazine consistently good reading and worthy of the fine institution which he loved. His perception of visual possibilities made it the perfect vehicle for a remarkable photographer. In his own rare articles and especially his regular personal back-page column he showed his devotion to quality, in both subject-matter and style. He was independent and critical, but never a belittler. When he praised, he did so eclectically, and never flawed a tribute with a jarring phrase. When he reminisced, he wrote with affectionate appreciation and wry but kindly humor."

"For some years Frank was living on borrowed time, knew it, and could speak openly about it. He did not fool himself about that. Nor did he deceive himself about the University he served so well. He was aware of its shortcomings; but he did not dwell upon them because he saw so many things that were fascinating, inspiring, and splendid. In producing a magazine which glorified those things, he shed continuing lustre on Washington University."
Beth Danforth removes the traces of well-wishers' kisses as Man-of-the-Year ceremonies come to a close.