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FALL 1976



WASHINGTON UNIVERSITY MAGAZINE

Annual Report Issue



Morris Carnovsky, Washington University alumnus and famous Shakespearean actor, portrays King Lear at Edison Theatre on campus. See page 2.

WASHINGTON UNIVERSITY MAGAZINE

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COVER: Scene in Brookings Quadrangle is featured on the cover of the 1975-76 Annual Report. The complete Report, with Comments by the Chancellor, is included with this issue of the *Magazine*.

Editor
FRANK O'BRIEN

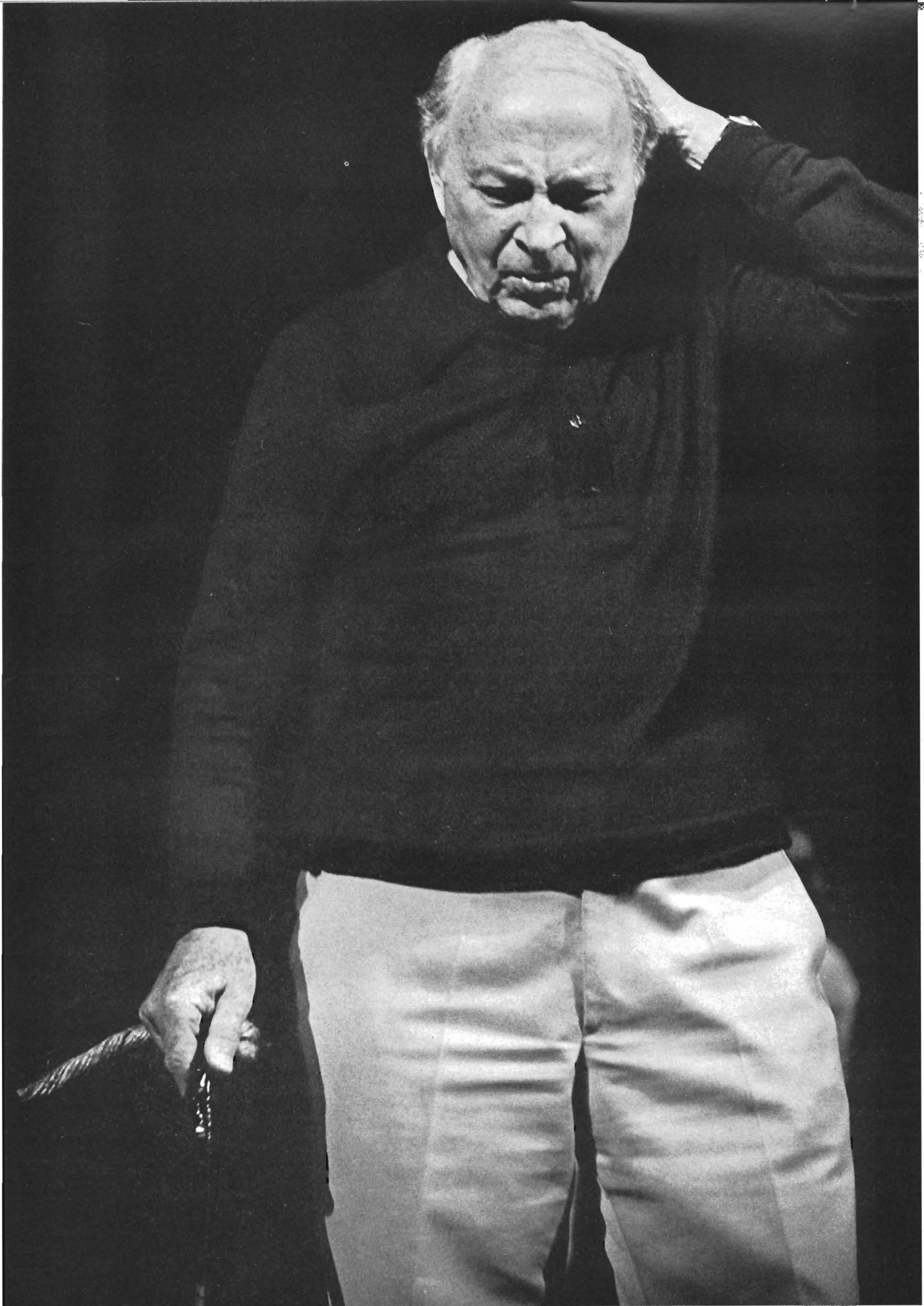
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Shakespeare, Students, And a Star

By Dorothea Wolfgram

Morris Carnovsky, a 1920 Washington University graduate, is one of America's foremost Shakespearean actors. Early this year he wrote to Alumni Association Chairman Stanley Lopata, "I have long pondered what form my offering to Washington University could take." He suggested that he give his services acting one of the major Shakespearean roles for which he is famous. The generous offer was immediately accepted by Richard Palmer, chairman of the University's Performing Arts Area. The results are the grist of these few pages. When Carnovsky departed he left two legacies—students who understood better how to act and a drama scholarship funded by receipts from six sold-out performances.

THE ROOM was white with a sterility born of fluorescent lighting and repainted woodwork. The inhabitants sat in a circle on the modern chrome and molded plastic version of the chair with extended writing arm. At one point around the circle sat a man whose presence transformed the scene. It was warmed by him and infused with life. In this bare room, Morris Carnovsky created a world.

On September 17, the students who would work with Carnovsky on *King Lear* met him for the first time. The play was read through. Seated there, dressed casually, using only an occasional gesture, the master displayed his utmost mastery. Without the trappings, he was the hoary king speaking to them and with them, not acting, *being*. And they knew it. Not a foot was shuffled needlessly; not a manuscript page was turned without concern for the intrusion. "Whew," said David Edelman with an elaborate wiping of his brow as Director Richard Palmer called a break at the end of the scene on the heath.

After return and reading of the final scene, silence reigned. The play's tragedy was upon all. After a moment, Carnovsky looked up from his meditation and around at the young faces. "What a sweet comedy Mr. Shakespeare has written for us to play," he said. There was a collective sigh and then sparse laughter. Students rose, collected books and scripts, a few ventured up to talk to the master, others listened to the scene call for the next day—a Saturday—then drifted out.

It was the beginning of a four-week relationship as fraught with exhilaration, despair, tension, joy, dissatisfaction, detachment, dependency, as any other close relationship the young players and crew were likely to have experienced before. Here was a group of 26 persons with an experienced professional as its head and a wet-behind-the-ears bit player at its other extreme in constant confrontation.

Whatever their motivations for becoming involved, involved they had become, and they were locked, for better or for worse, in a collective creative effort, and always the spectre of opening night hung over them.

What saved everyone, including the technical crews, was that rehearsals did end and everybody could go home. What saved everyone were the company's jesters. What saved everyone was the resilience of students. What saved everyone were Morris Carnovsky and Richard Palmer. What saved everyone was Shakespeare. What saved everyone, finally, was the doing itself and the joy in it.

Two days before opening, Carnovsky explained: "We are creating a dynamic thing here. We do not know what will happen. Anything might. Nervous? Am I? Not now, but I will be. I'll yell at you. I might throw you out. Nothing ever immediately goes the way it should. Sometimes it is worse than it should be and sometimes it is better. It is almost never as it should be. Tomorrow night I might have a bad dinner and come to the theatre in a worse mood than I am now."

AS THE TENSION rose, as the time shortened, everyone's public politeness increased and private misgivings grew more biting. Carnovsky stopped in the middle of the stage in a critical scene, faced the house. He spread his arms stiffly, a signal for those behind him to stop playing. "Richard, I am sorry, but we cannot have that thunder sound. We cannot." His voice, so rich in texture that he wore it always like a regal garment, reached Dr. Palmer in mid-house.

"It is because we haven't the drum yet. We need the thunder sheet now for the cues. We will have the drum tomorrow, I promise," came back Palmer's own deep stage-projected voice.

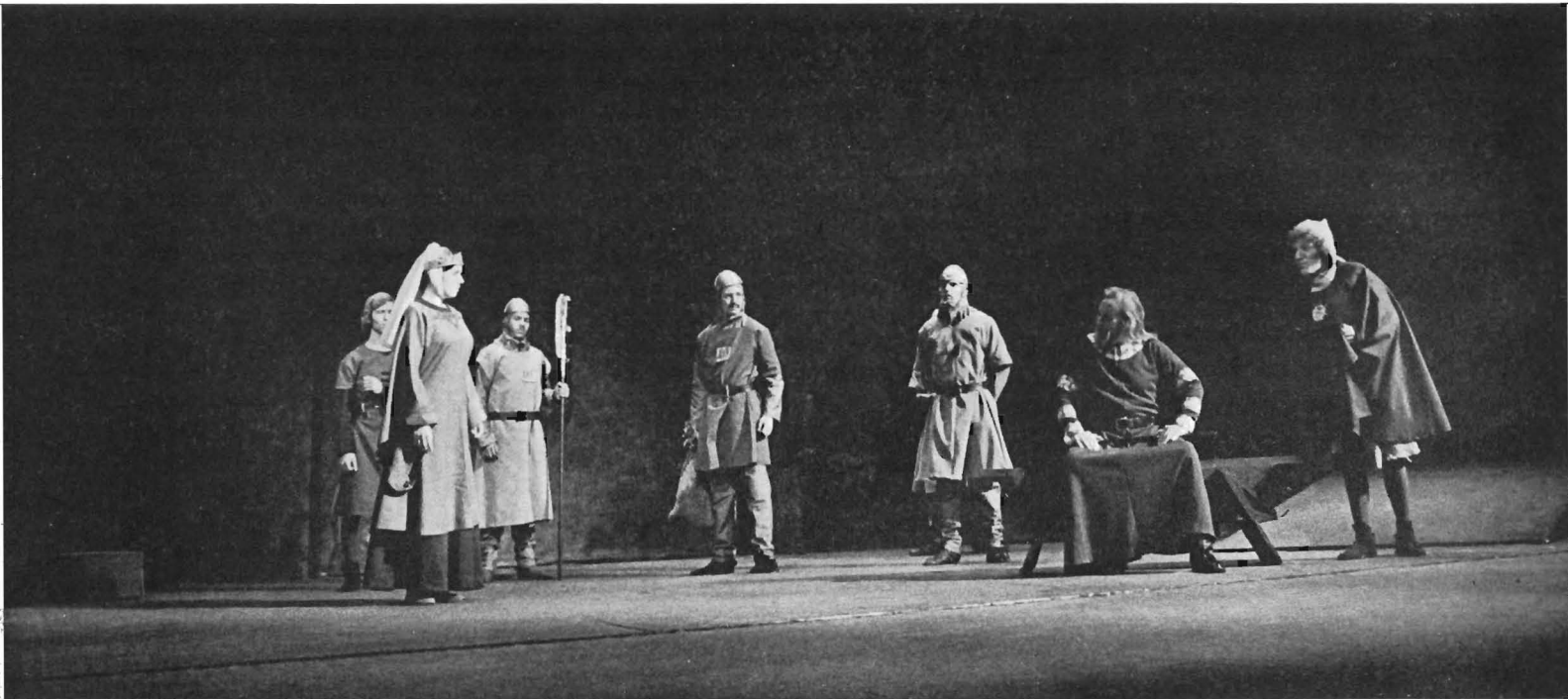
"Oh, please forgive me," said Carnovsky and the rehearsal went on—badly.

Photography by Herb Weitman

In the final scene of *King Lear*, Goneril comforts the fallen Edmund, played by Trip Bates, AB 76. The cast included students, alumni, and a faculty member.

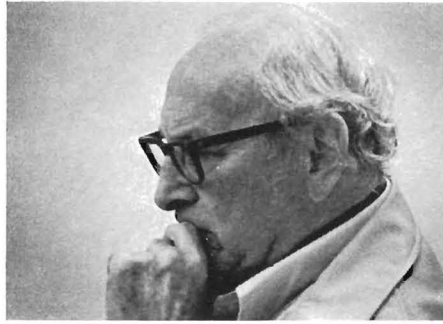


A representational set designed by students and traditional costumes by designer Niki Juncker, BFA 59, enhance the performance, caught here in an early scene.



At right, in rehearsal Carnovsky helps Scott Weisman, who played the Fool, with a line. Looking on is Clyde Ruffin, a drama faculty member, who played Kent.





Everyone was edgy. It was the first time light, sound, and scenery were being overlaid on the product the actors had been carefully fashioning for three weeks. The technical crews had also been honing their product, tailoring it carefully under Carnovsky's direction. But the interface was shaky.

A young drama graduate's nerves increased his already prodigious smoking. He literally wrung his hands for himself and for Mr. Carnovsky. "God, it's awful," said Trip Bates.

"Oh, no," said Carnovsky. "It is going very well for a first tech rehearsal." A moment later, he stood in agony in the storm on the heath, arms outstretched to challenge the heaven's bolts, and the lightning flashed behind him. He whirled around in search of it, saw what was happening, and turned back to stage front. Dropping his arms, he said, "Take a picture of me now and label it *Despair*."

But there were the joys. Carnovsky moved to the center of the bleak and cluttered drama studio. "Tom," he said to the young man playing Gloucester, "when you come in here on Edgar's arm and you say, 'Methinks the ground is even,' use your foot. Tap in front of you to feel the ground. Believe in what you are doing." He illustrated. Instantly, he became a blind man, groping for sense. And Tom Beaird understood.

A FEW MOMENTS later, Carnovsky knelt beside Tom. "Don't get up on that. Stay down. Remember that you believe you have jumped from a cliff. You certainly died and yet you did not. That is a miracle to you, but surely every bone in your old body is crushed. If you move, be prepared for agony." And Tom understood.

The cast was on stage, vestiges of the scenery rose behind them. Act I, scene iv, was called and two benches brought.

The players had progressed to a point at which the King sat on a bench as his fool knelt beside him. Scott Weisman began to sing. The lilting Elizabethan tune was not right. Carnovsky sang the measure. Scott tried and failed. Carnovsky repeated it. From the sidelines came a chorus of cast members. Everyone, it seemed, could master the tune except the man who was to deliver it. "That's all right, Scott," said the master in a gentle chide. "We'll sell sheet music in the lobby."

As the scene was replayed, Scott delivered a line, "Dost thou know the difference, my boy, between a bitter fool and a sweet fool."

"No, no," said Carnovsky. "The line is 'bitter fool and a sweet one.'" Dr. Palmer confirmed the line as Scott had delivered it.

"What a lousy writer," smiled Carnovsky. He looked up and admonished, "And don't write that down." Then he smiled again. "You are," he announced to all, "what Shakespeare called 'a picker up of unconsidered trifles.'" Everyone laughed and felt better. The play improved with every correction.

The master illustrated, playing everyone's part better than he, or even she. Pressed for time, he admonished. He insisted. He teased. He even cajoled. But mostly he explained. Did they know what "to boot and boot" meant? "Funny phrase, but it is saying 'May heaven bless you again and again.'" Why did "sweet marjoram" come to Edgar's mind when he encountered Lear on the heath? It was thought of as a remedy for insanity.

"You must come rushing in here. He is a threat. You must protect me." "Slow down, count to four, let a little air in there. You are about to implore heaven for forgiveness. Don't rush. That's wonderful." "Don't you see that we have all been itching for someone to tell her off and you do. Don't puff yourself up on it.

You have nice height. Just do it naturally." "Do you know why I told you to take your hand off your sword in that scene? You looked as if you were ready to pounce on me right there."

Rick Hochman smiled, a bit chagrined, but being one of the cast members who managed to help keep everyone's spirits up, he said, "Do you know why I had my hand on the sword in that scene. I'm having trouble knowing what to do with my hands!" Everyone laughed; the forthright confession touched a tender cord. And the master laughed too, he was not out of sympathy with the difficulty of acting.

"It's hard," he said time and again. "The words are hard, but don't act, just simplify it. Just try to let it come."

OPENING NIGHT. Everyone had the jitters. "The house is open, Keep it down," was the word sent out by stage manager David York.

"Five minutes," said an assistant stage manager as she stuck her head into a door marked "Caution, Co-ed Dressing Room Because of Lear." "Five minutes," she repeated to Tom Clear.

"I wish you hadn't said that," he responded.

"Break a leg, Roger,"

"You, too,"

"I'm a little nervous."

"So, be a little nervous."

"Places, places," cried the stage manager.

Carnovsky came from his small dressing room. A group of cast members gathered. He said, hurriedly, "Talk faster than you did last night. Many people would like it as it was done last night, but it will be better if we pick it up a little. Remember, it will be better tonight." Everyone went quickly to his or her entrance spot.

By intermission everyone knew it was going well. Catherine Madden-Metz, who



Catherine Madden-Metz as Cordelia. She is a graduate student in a master's program in literature and drama. Among cast members were a law student and a psychiatric resident.



Clyde Ruffin, who joined the faculty this fall to teach acting and Black theatre, played the Earl of Kent, who in disguise becomes the retainer Caius who loyally serves King Lear.



Above right is Candy Rhea as Goneril. She is a drama major in the Performing Arts Area of the College of Arts and Sciences. Below right is Susan Rohrer, a fine arts student, as Regan. They played the ungrateful daughters.

played Cordelia, sat for a while in the Greenroom, then found a private cubbyhole to listen and wait between the first act and the next to last. Trip Bates lamented the failure of a piece of scenery just before his soliloquy as Edmund. Candy Rhea, who played Goneril, marvelled, "He is really giving it his all. He's marvellous. There were tears when he said to me, 'I am asham'd that thou hast power to shake my manhood thus.' I almost cried."

"Good, David, good," said Carnovsky as his backstage path crossed that of Edgar. "You missed a line," he said to another young man, who looked startled. "Where you say, 'Sir, he answered me in the roundest manner,'"

"I said that,"

"Yes, but earlier," he waved an elegant hand to wind back his mind. "Get a script. We'll find it." As it turned out the young man had taken one of Lear's lines. "Well," said Carnovsky, "get it right tomorrow."

"Oh," remarked one ecstatic player, "they are a wonderful audience. They laugh where they should laugh and they cry where they should cry." And it was true.

THE PLAY ENDED. The applause swelled and sustained through bows. Then backstage, Carnovsky gave each of his leading ladies a hug and a kiss. He squeezed the hands extended from the young men. "You were good. You were good. You were all good."

Before he entered his dressing room, he gave Scott Weisman a hug and laid an affectionate hand aside his cheek. "Well done, sweet fool," he said. Scott blushed with pride.

Everyone began to get out of costume. The first night was over and it went well.

Carnovsky stayed at the University's guest residence during his sojourn and frequently spent off-campus time with his sisters, two of whom live in St. Louis. He,



himself, is a native St. Louisian and a 1920 graduate of the University, but St. Louis has not been home since that year. His real home for more than fifty years has been the American stage.

IN A CLASS taught by Dr. Palmer on American theatre, Carnovsky spoke of his early years in New York. Dr. Palmer had asked him about the state of American theatre which produced the formation of Group Theatre in 1930. It was a subject Carnovsky warmed to, first referring the class to Harold Clurman's book on the Group Theatre, a gathering of actors, directors, and later playwrights who have had a profound influence on theatre, even to this day.

He told the class of the system of stars which dominated Broadway. "Some of them were awfully good, but they were like a stable of thoroughbred horses, each trained to deliver one product." Personally, he confessed, he did not question the level of the literary product, since he was a young actor trying to break in. He confided that a young friend, Sam Jaffe—slightly his senior in experience—had sent him to Provincetown, where a play was being cast, and that he had gotten his first New York part. From that part, he had begun to work steadily, often in Theatre Guild production.

"No scientific training in acting was available. You picked up bits and pieces from those people you played with who you thought were good. I remember asking an actor who always played butlers—and was very good at it—about his secret. He said, 'My boy, it is all footwork,' and as I watched him thereafter, I saw what he did. He always seemed to be in the right place at the right time."

In the late 1920's, he said a small group of actors began to gather in the evenings to talk. "We talked of what we knew of theatre in Europe. We had heard of Stanislavsky and we would spend hours discussing him and his ideas of

acting. We were not beginners, we were all professionals, but we felt something was wrong with the theatre we were part of. I personally began to develop a discontent. I did not know what it was or who was to blame: the system, Broadway, or me.

"A group formed around Harold Clurman, Lee Strasberg, and Cheryl Crawford. Those of us who were on the road would dash back to New York on Friday to gather and to listen. We talked endlessly of the 'organic' nature of the theatre, and we knew that eventually we would start a theatre centered on that idea. We also made the decision that it would be an American theatre; that we would not be classics nor revivals. We would grow as a unity: actors, director, and author."

The Group Theatre opened with a new play called *House of Connelly* and thereafter did other new plays by Maxwell Anderson, William Saroyan, and Clifford Odets. "We were fortunate that Brooks Atkinson understood what we were doing and wrote about us and supported us, because in our whole career we had only one hit. It was a play called *Men in White* and in it I think we started the whole American theatre scene of washing up for surgery.

"Oh, we were passionate. We were passionate about everything. We would say things like, 'Now, let me act this ash-tray.' We played in the winter, and in the summer, we would all go off together. We would find a house in the country and there we lived together and ate together. We loved. We argued. We talked. But we stayed together."

He told of a split of the original group over a disagreement concerning "the method" of acting. "'The method' was based on Stanislavsky and on a theory called affective memory,' which creates a stage emotion by recalling an emotion from the past. Most of us felt that all of our acting could not be based upon 'af-

fective memory,' because we found that it worked the first time and many times thereafter, but that it didn't work all of the time. We therefore really combined 'the method' with the element of Action.

"The miracle of the Group was that it flourished in the hard soil of the depression. We were not frivolous. Odets had come to us as an actor and then began to write for us and soon became our playwright. We were in search of the central idea of a play, a common language, a common construction, a cohesiveness, which represented the society in which we were living."

DURING THE HOUR, Carnovsky brought that important period of theatre history so alive for his class that they sat awestruck, caught up in his fervor. He spoke to them of persons they had read about as the great influences of the American theatre early in this century, and they realized that he, too, was one of those. During his stay, he lectured to numerous acting classes, talked of *The Merchant of Venice* to a Shakespeare class, appeared for a two-hour drama lab.

He asked the cast members of *Lear* occasionally who would be in a particular class he was scheduled for. If some said they would be, he said, "Good, it will make me feel at home." It made them feel good too.

"I don't teach these classes. I just tell them some things I know about. But, really, I'm beginning to feel in them like Rip van Winkle."

For four weeks, Morris Carnovsky, Richard Palmer, and three dozen students conducted a love affair. They adored each other. They hated each other. They laughed together. They cried together. They lost their tempers. They kept their tongues. They loved and they learned. It was like every other close relationship. It was like no other.


Professor Watson is internationally known in two special worlds: Cartesian scholarship and speleology. He and Roger W. Brucker are co-authors of The Longest Cave (Knopf, 1976), which tells the story of the generations of cavers whose explorations culminated in finding the connection between the Flint Ridge and Mammoth cave systems, forming the world's longest cave. He is married to Patty Jo Watson, professor of anthropology, who has conducted extensive archaeological exploration in the caves. The poetry excerpts are from Answer Back (Atheneum, 1969) by Donald Finkel, University poet-in-residence.



The Adventure Of the Cave

By Richard A. Watson

Professor of Philosophy



ON SEPTEMBER 9, 1972, five men and a woman crouched below a limestone ceiling in the cold, murky water of an underground river. They had traveled about six miles in twelve hours, on their bellies, hands and knees, stooped over, through dust, gritty sand, mud, and finally waist-deep water. Although there are several places along the route that are as dangerous as any in any cave anywhere, what makes this trip extreme is its length, the persistence of the challenge to the body's skill, strength, and agility, for the cave goes on and on and on. This kind of cave exploring is a matter of endurance. It is a test of the resilience of the body, as much as of its ability to tolerate the continual discomfort of gritty sand in the eyes and behind knee-crawler straps, of bumps and abrasions from stone floors, walls, and ceilings, of clammy cold clothes, as of sheer muscle power.

Even more severely, there is the mounting psychological strain from the weight of black miles of tiny passages, twists and turns piling up behind one, the relief of having passed a dangerous place being immediately overcome by the realization that the challenge will have to be met again on the way out, and the nagging necessity of always having to remember the route for the return. Dark, cold, silence, and the feel, odor, and taste of wet limestone, these are the cave's elements. Its essence is the unknown.

They were tired and all questioned whether they should push on. Or rather, the question was merely the routine protest of ragged souls and torn bodies. There really was no question. They had long past committed themselves to much more than they had suffered so far. The leader brushed his fingers against the flat ceiling just above his head and moved forward through deep green water. The yellow light from his carbide lamp only intensified the gloom. The mud-slick ceiling lowered, he stooped further, and

moved on, submerged to his neck now, with less than twelve inches of airspace.

After a few tens of feet, his light seemed to dim. He lifted his head cautiously to find that he had come into an immense vault with no ceiling visible and with black water stretching out before him as far as his light would reach. After hours of being confined by small passages, he felt a momentary surge of vertigo. Then he stood firm and shouted back, "I'm through." As his eyes adjusted, he saw a gleaming white line in the distance. It was a metal pipe, the railing on a causeway. "I see a tourist trail!" he suddenly shouted in a burst of emotion that even the huge underground room could not contain.

*Who knows how
the Old Ones entered?
We go in at the hole
that presents itself;
dew glistens on the blue moss
at the lip,
water leaps from the rock.
One cold slap
on the back of the neck
and you're through.
Can't stay dry forever.*

With that shout, the world changed utterly for a few people: for the few dozen who had given themselves to accomplishing this feat, to the few hundred who actively supported them, and to the few thousand others in the world who were the only ones who knew and cared about what was going on. It had been done. A few minutes before, they had been near the bitter end, as far out in a cave wilderness as one could get in the Flint Ridge Cave System, one of the toughest in the world. Now, after almost thirty years of sustained effort, a dream that was more than a hundred years old had come true. The Flint Ridge Cave System had at last been connected with

The Adventure of the Cave

Mammoth Cave. Cavers had now climbed their Everest, reached their pole, walked on their moon. The resulting Flint Mammoth Cave System was more than twice as long—nearly 150 miles—as any other known cave in the world. Like the four-minute mile, it had been done in our lifetime. For those of us who really care, the accomplishment can never be thought of without emotion.

Who are these people who care so passionately about this almost unknown activity, cave exploring? I have thought a lot about the question, and so far have come up only with a circular answer: They are those of us who have what can be described only as a fanatical desire to explore caves. We want to know what is around the next bend in the passage. Some of us will drive our bodies and our selves into the tightest of holes to find out.

What is the reward? Basically, it is the knowledge that one has managed to accomplish what one set out to do (if one does in fact succeed), something that requires high skills, extreme physical fitness, intelligence (for one must evaluate both oneself and the cave), and mental control. Beyond that there is also the reward of creation. Pat Crowther, on that final connection trip, has best expressed this creative aspect. She spearheaded the connection, for on an earlier trip she was the first to push through the most dangerous passage along the entire route, the Tight Spot.

CONSIDER this challenge: You are miles inside a difficult cave. You are crouched in a tiny room about the size of the inside of a small automobile standing on its side. At the ceiling at one end of the room, where you can almost stand, there is a hole. It is perhaps wide enough at the top to push into (you will have to try to find out), but there is nothing to lie on in the hole, for it opens downward

*In the glacier's belly
I sing my brittle song,
grind my wind-bitten face
between the mountain's thighs
with the same grudging grace,
work my magic without charms.*

in a V. Never mind. Hoist yourself somehow up into the hole, with arms outstretched. Your legs flail in empty space behind you, but somehow you wiggle into the hole. Now you see that the passage goes on. But you are slipping, slipping down into that V. You hold yourself up by bridging the width of the passage at the ceiling with one arm, your elbow painfully jabbed into one wall, your hand pressed against the other. Jammed in on your side, holding yourself from sliding down into the V with your upper arm, your other arm stretched helplessly down below your body in the V, relentlessly reaching, finding no holds there, you inch along. Rock projections press into your chest and back. You literally move an inch a pull. You are *hot*. Your breath is fast. You can hear your heart thumping rapidly between the confining rock walls. Your body is stretched as taut as a steel banjo string. If you slide down into that V, into that wedge, you will be trapped. There is absolutely no more than enough space for your body in the hole over that crack. No one could get in to help you. If you slide down, you will be suspended. The tension on your body will be extreme. No one could help you.

You remember a similar situation in England; that man's body is still in the cave where he got stuck; it was just impossible to get him out. At least it might be quick. The strain might kill you in twenty minutes. Somewhere in the back of your mind is the poignant thought of your husband and your two young daughters. You do and you do not think about all these things as you inch along.

Speleologists explore rediscovered Hanson's Lost River, one of the key links in the connection between the Flint Ridge and the Mammoth Cave systems in Kentucky.





Washington University archaeology students of Professor Patty Jo Watson examine relics of prehistoric cave explorers in the Flint Ridge Mammoth Cave System. From left: Margaret Dittimore and Kate Moore.



You are going to get through, to see what is on the other side. After all, the passage is only fifteen feet long. It takes you fifteen minutes to get through.

Pat Crowther was the first. She is thin, weighing only 115 pounds. But John Wilcox made it, too, and he is six feet tall and weighs 170 pounds. He has scars on his breastbone from his several passages through the Tight Spot. He wanted to be the first to connect with Mammoth Cave. He was the leader who went through the final water to make the connection. What is driving these people? Part of it is the joy of creation. Here is what Pat Crowther said:

It's an incredible feeling, being part of the first party to enter Mammoth Cave from Flint Ridge. Something like having a baby. You have to keep reminding yourself that it's really real, this new creature you've brought into the world that wasn't here yesterday. Everything else seems new, too.

HER WORDS express the caver's conceit. We speak of it as being *our* cave, and we certainly think of it as our creation. It was not there before. Until cavers went through it, the longest cave did not exist. The whole concept of the longest cave—of the Flint Mammoth Cave System—is a human invention. Like the notion and existence of wilderness, it depends on human recognition and appreciation for its being. Oh, sure, there were dark holes down there in the rock long before any of us ever went through them, and there must be many more such holes unexplored. But they are alien, outside of the world of human kind. Part of the eerie pleasure of cave exploring comes, in fact, from how close one feels to the alien when entering those crevices in stone where no human being—no light—has ever been before. That emotionless blankness is very persistent in the cave. We draw our thin line of passage on a

map, but the alien stone surrounds us still.

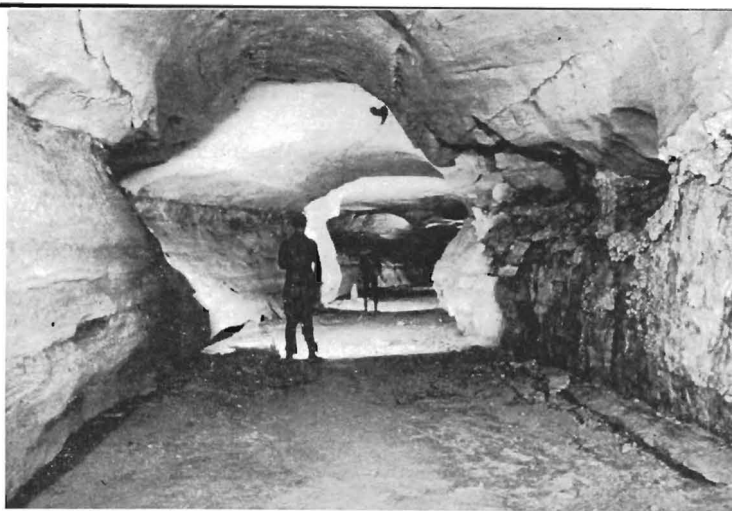
I tried to make that big connection for nearly twenty years, and I laid some lines there underground. But my impulse for creation in the cave, my passion for far-out cave exploring, was spent before we had pushed on that rock long enough to

*I grovel in the passage,
grind my belly over
the fallen fragments.
Past the stones of memory,
down the corkscrew of nausea,
a star of nerves trembles
at the end of my nose.*

make it yield. It is wearing and it takes a while. The oldest person on the connection trip was ten years my junior; the youngest, twenty years. Nevertheless, it belongs to us all.

Along the way, we made a lot of other things, lesser things, or perhaps just things different from that final *beau geste* of the big connection. Some twenty-five years ago, not a great deal was known about the caves inside Mammoth Cave National Park. A few people—Jim Dyer, Bill Austin, Jack Lehrberger (you may never have heard of them, but they are names to conjure with in caving circles)—had begun exploring and mapping. Then Phil Smith, Roger Brucker, Roger McClure, and a few others, including me, took the counsel of Dr. E. Robert Pohl (the father of modern speleology in America) to form an organization called the Cave Research Foundation. Phil Smith was the real designer. We needed to start doing scientific research for our foundation, and we had to do it ourselves, which explains why there are articles in geology journals of that era by Smith (degree in psychology), Brucker (degree in art), and Watson (degree in philosophy). We recruited for cave science and for cave exploration. Quite a

Looking almost like an artificial tunnel, "Mather Avenue" is an impressive part of "Unknown Cave," explored in the search for the big connection between Flint Ridge and Mammoth.



Sheldon Helfman, professor of architecture, did numerous sketches and water colors inside the Flint Ridge Mammoth Cave System. Below is a sketch made inside Lee Cave.



Early explorer of Mammoth Cave, investigating a passage by the light of a flaming torch.



The Adventure of the Cave

few who started out from scratch in those Kentucky caves are now professors, sending their own students to continue painting the picture. The Cave Research Foundation is itself a major creation, a very successful volunteer organization that provided the canvas for the creation of the longest cave.

HOWEVER, we soon learned that we were by no means the first to put human shape to that stone. About 4000 years ago, pre-Columbian aborigines were exploring deep in these caves. They mined gypsum and mirabilite from the walls, and they lived in the entrances. They used cane torches for light. We thought this was pretty spectacular and daring of them. Then my wife, Patty Jo Watson, professor of anthropology at the University, decided to find out how it really was. She organized some action archaeology experiments, sending half a dozen of us, wearing only shorts, into the cave, carrying cane torches.

*Nearing the entrance,
soles of my feet bruised on the
breakdown,
head pounding under the yellow hat
and the flower of flame, I thought:
This will do for a lifetime.
Then grey sunlight up the hill,
I felt the stones go wet again underfoot:
Was that all? A wash of regret.
What was it? Must go back.*

It was a revelation. The torches give a warm orange light that illuminates cave passages better than the narrowly focused carbide lamps modern cavers use. It is easy to get used to walking barefoot on the rocks, and the torches are quite simple to carry and to keep aflame. We had a wonderful time, and demonstrated (as archaeological evidence had already

shown) that one can explore even the tightest passages with cane torches.

We did not create the past, but we recreated it. These experiments illuminated the artifactual material that was being dug out of the caves, and made into a living reality the remains of ancient people. And dear to cavers is one result: Of all the many explanations for the reason the pre-Columbians entered every possible nook and cranny within two miles of the entrances of the caves (as the evidence—torch fragments, woven sandals, fragments of bone and flint—shows), we think the best is that they were simply fanatical cave explorers. They wanted to see what was around the next bend.

We make maps, we solve scientific puzzles, and we explore the cave to its limits. We also get to know something more about ourselves and our fellow explorers than we might in ordinary encounters. There is certainly something driving us. What it is perhaps comes out when I am asked time and again, "What is a philosophy professor doing exploring caves?" First, of course, it is a silly question. Why not? But, then, I can give a good answer for a philosopher: I want to know more than just the ordinary. But that is also a good answer for any explorer, for anyone who wants to taste more of life than is served on the plat-

ter of convention. As to why this particular person explores that particular version of the cave, well, does it really matter? What matters is that he wants to know what is there, and that he goes to see.

In this process, he creates something, if only a part of himself. We want not only to know, but also to create. And there is plenty to do with the cave. Donald Finkel, University poet-in-residence, structured a book-length poem around the cave, *Answer Back*, excerpts from which are included in this article. He has been known to disappear—that is, he sits alone in the dark—in the cave for as long as six hours at a time. He is working on another long poem, about Stephen Bishop, a black slave who was Mammoth Cave's most famous guide.

Shelly Helfman, associate professor of architecture, takes his light into the cave, where he makes drawings and water colors. One of his illustrations appears in this article. They speak their own language, as do the photographs many people take in the cave.

ROGER BRUCKER and I wrote a book. The experience was not complete for me until I could see what I had to say about it on paper. Others keep their counsel. Bill Austin and Jack Lehrberger, two legendary cavers (although I ought to remark that neither is yet fifty years old), simply smile and let the legends grow. So there are cavers who try to tell all, and those who try to tell nothing. Perhaps what is really there to say is summed up best in the words of one of the taciturn ones, who once, in a moment of uncharacteristic loquacity, said, "Gee, didn't we have a grand time!"

*A jolly hole, you think, to call your own,
and you grin back.*



HARRIET HOSMER:

Nineteenth-Century Free Spirit

By Dorothy Brockhoff

Harriet Goodhue Hosmer, the first woman to study anatomy at the precursor of what is now the Washington University School of Medicine, became a famous nineteenth century neoclassical sculptor. The leader of what Henry James called . . . "that strange sisterhood of American 'lady sculptors' who at one time settled upon the seven hills [of Rome] in a 'white, marmorean flock'," the petite and perky Harriet carved out a career for herself in what had heretofore been a man's world. Aided by one of Washington University's founders, Wayman Crow, Harriet Hosmer was, in her day, the friend and confidant of such personages as the Czar of Russia, the Prince of Wales, the Robert Brownings, and Nathaniel Hawthorne. Several of her sculptures, including the marble bust of Daphne, lent to the Whitney Museum of American Art in New York for its Bicentennial Exhibition this year, are part of the Washington University art collection.

Harriet Hosmer at work on her famous ten-foot bronze sculpture of the late United States Senator from Missouri, Thomas Hart Benton.

THIS SPRING, when the Whitney Museum of American Art in New York mounted its Bicentennial exhibition, "200 Years of American Sculpture," a work from Washington University's art collection was included in the show. This sculpture, *Daphne*, a twenty-seven inch white marble bust by Harriet Goodhue Hosmer, a nineteenth-century neoclassical sculptor, is of special interest to the Washington University community for several reasons.

Its creator, whom scholar William H. Gerdts, Jr., has characterized as "the best known sculptor of her generation," might never have become famous had it not been for the interest and support of Washington University co-founder and benefactor Wayman Crow and his family. In 1850, persuaded that Harriet was especially talented, Mr. Crow interceded for her at McDowell Medical College (Missouri Medical College) in St. Louis, precursor of the Washington University School of Medicine, after several Eastern medical schools had rejected her because of her sex. There this young woman, only twenty years old at the time, studied anatomy for nine months with Dr. Joseph Nash McDowell, while the only other female member of the class, Jane Peck, studied chemistry.

Wayman Crow came to know Harriet Hosmer through his daughter, Cornelia. The two young women had become good friends when both attended Mrs. Charles Sedgwick's school at Lenox in the Berkshires. While in St. Louis, Harriet lived with the Crow family and trudged two miles to McDowell's Medical College each day. Years later in her biography *Harriet Hosmer—Letters and Memoirs*, Cornelia Crow Carr wrote: "With intuitive delicacy, Dr. McDowell offered to give her each morning in his library an abstract of the lecture prepared for his students, with the opportunity of examining each specimen used in exemplifying the lesson of the day."

The 128 male medical students did not even learn of the existence of the Misses Hosmer and Peck until the February after they had registered. When they did, another authority on Harriet, Margaret Farrand Thorp, reports that the men students never "offered any impertinence to the eccentric young woman for the very good reason that she carried a pistol in her belt and was known to be a crack shot."

Dr. McDowell was as much a maverick as Harriet. He refused to lecture on Fridays and during thunderstorms took refuge in a featherbed for fear of being struck by lightning. But, he was generous to creative people. Some years earlier, he had taught anatomy to sculptors Hiram Powers and Shobal Clevenger.

Years later, Harriet wrote that Dr. McDowell had "provided invaluable service to her in the Anatomy Department," and added that she prized "his instructions more highly every day, as I see how invaluable they were." She came to regard Wayman Crow as her patron, and always addressed him as "The Pater."

BEFORE returning to her home in Watertown, Massachusetts, with her certification from McDowell Medical College, she decided to go sightseeing. Much to the amazement of her startled friends, she boarded a steamboat bound for New Orleans, all alone, and then sailed back up the river to St. Paul. There, she smoked a peace pipe with the Chief of the Dakota Indians and had herself lowered into a lead mine in a bucket. On the way to Minnesota, she also won a wager that she could climb the highest bluff in the Mississippi valley (near what is now Lansing, Iowa) faster than her colleagues, and she did. It is still called, in her honor, Mount Hosmer.

Harriet, the daring, fun-loving, intrepid young woman, owed much of her blithe spirit and robust health to her doctor-father, Hiram, who resolved that

she should not die of tuberculosis as had her mother, two brothers, and an elder sister. He insisted she spend much time out of doors, and taught her to ride, shoot, swim, and skate. He also indulged her. She had her own boat, which she rowed herself, a Venetian-built gondola with "silver prow and velvet curtains," and "a dainty little rifle cased in ivory and tipped with silver." By the time she was a teenager (Harriet was born in 1830), she was a saucy tomboy who could shinny up a tree and fill a studio with birds, bats, beetles, snakes, and toads. Some she dissected, others she preserved in spirits, and many she stuffed, using the taxidermal skills taught her by her father.

Prim and proper New Englanders looked askance at Harriet's upbringing and were critical of Dr. Hosmer for raising a boisterous, rollicking, mischievous daughter. But, as one old dowager quaintly put it, "He knew that he was keeping his little daughter on earth instead of in heaven." Because of her strong-willed, decidedly unconventional demeanor, she was dismissed from more than one school before her father packed her off to Mrs. Sedgwick in Lenox.

THERE, Mrs. Sedgwick received "Happy Hatty," as Harriet was called, with the remark, "I have a reputation for training colts, and I will try this one." Harriet spent three joyous years there, and soon became the boon companion of Cornelia Crow Carr. She also came to know Fanny Kemble, the actress, and Mrs. Sedgwick's novelist sister-in-law, Catherine Sedgwick. "These ladies," according to Mrs. Thorp, "thought it quite proper for a female to show a little independence and to devote herself seriously to a profession." They encouraged her avocation of modeling small figures in clay, with the result that she returned to Watertown at the age of nineteen de-



Harriet Hosmer said of this work, completed in 1854, "Her name is *Daphne*, and she is represented as sinking away into the laurel leaves."

termined to become a sculptor. When she departed, Mrs. Sedgwick said: "She was the most difficult pupil to manage I ever had, and I think I never had one in whom I took so deep an interest, and whom I loved so well."

Upon her return to Watertown, where she remained briefly before traveling to St. Louis, Harriet is said to have frequently walked from home and back—a distance of fourteen miles—in order to study drawing and modeling with Boston sculptor Peter Stephenson. It was at this time, frustrated in her attempts to study anatomy in New England, that Harriet went West to study for almost a year with Dr. McDowell.

While in St. Louis, she developed self-confidence in her ability and the skill to become a serious sculptor. But her life was not destined to be easy, for as Margaret Wendell LaBarre noted in her master's thesis on Harriet Hosmer, written at the University of Illinois in 1966, "she was a woman acting in a man's career and a man's world."

In time, she became internationally famous, numbering as her friends, according to Gerdt, "the Queen of Naples, the Czar of Russia, the Prince of Wales, and the Empress of Austria—for whom she did a sculpture of one of her favorite

dogs." Among her patrons were members of the British aristocracy, including Lady Marian Alford, the Marquis of Northampton's daughter, who, according to Elizabeth Barrett Browning, knelt before Hatty and placed a large, heart-shaped ruby ring crowned with diamonds on her finger. Nathaniel Hawthorne, William Wetmore Story, a fellow sculptor, and William Page, who painted her portrait, as well as many other artists and writers, also came to know her well.

Another writer, Sarah Wingate Taylor, described her fame more extravagantly and less elegantly. She wrote: "Harriet entertained two continents with her goings-on, hitting the headlines at home so that her friends could paper rooms with clippings, while in Rome she held unstuffy court to average folk as to crowned heads or brows topped with laurel. Gladstone was her friend. The Thackerary sisters, the Trollopes, the Longfellows, empresses, a succession of princelings came, pinning, now and again, huge diamond-encrusted state decorations on her plum-colored smock beneath the laughing eyes."

BUT ALL this recognition came some years later when she lived abroad. Meanwhile, after returning from Missouri, Harriet worked diligently in her Watertown studio again for about two years. She herself, in her voluminous correspondence collected and published by Mrs. Carr in her book, describes the scene. To Mrs. Carr she wrote: "A sense of stern necessity urged me to rise this morning at half past three o'clock and break my back over the doctor's [McDowell] medallion which like Christmas comes on slowly." In his gentle and touching response, Dr. McDowell said: "Hatty, I have covered the marble you sent me in white crêpe, not to mourn for the loss of a friend but for the ab-

(Continued on page 37)

**Washington University
Annual Report
1975/76**

Comments by the Chancellor

Foreword

On the following pages is presented a condensed report of the operations of Washington University during the fiscal year ending on June 30, 1976. It both reviews the details of the University's financial operations and summarizes the University's accomplishments in the fields of teaching, research, and service to the community.

The year ranks as one of the most important and significant in the history of the institution. It was during this past year that the Univer-

sity surpassed its \$120 million development goal two years ahead of schedule, thus assuring the continuance of the commitment to excellence that has characterized Washington University in the past.

Matching the \$60 million Danforth Foundation challenge grant was a tremendous tribute to all those who have given of their time and energy and resources to Washington University—to the trustees, the alumni, the many other generous friends, and to Chancellor Danforth and other members of the Univer-

sity community. It is a dramatic illustration of the esteem Washington University has earned in its community and in the nation. The accomplishments of this past year will serve as a solid foundation and an exciting incentive for all who are involved and concerned with Washington University to make sure that it sustains and strengthens its standing as one of the leading private universities in the nation. My deep gratitude goes to all who have been so generous to our great University.

Charles Allen Thomas
Chairman
Board of Trustees

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Financial Report, 1975-76

Highlights

Climax of the 1976 fiscal year was the success of the University's \$120 million matching fund drive two years ahead of schedule. The generous response of the University's constituency to the Danforth Foundation's challenge grant has been particularly heartening to the academic community. What this achievement means to Washington University is discussed in some detail in "Comments by the Chancellor," which follows the Annual Report. This review of the past year can offer only a sampling of the activities and a suggestion of the spirit that pervades the campus. It is accompanied by feelings of high expectations for the year ahead.

Last fall, the largest freshman class in the history of Washington University was enrolled. It was also one of the most promising. Some 58 percent of the entering students had graduated in the top 10 percent of their high school class. About one of every 15 was a merit scholar. Their mean Scholastic Aptitude Test scores ranked in the 88th percentile on the national distribution of scores. During the year, applications remained strong, with close to 4100 students applying for the 1200 places in the 1976-77 freshman class.

The picture at the graduate level was good, too. A record number of advanced degrees was awarded: 1320. Of these, 371 were first professional degrees in dentistry, law, and medicine, and 136 were the Ph.D.

New programs continue to be developed. One that transcends a single school is the recently approved proposal for a joint BS or AB/MD degree program which is to go into effect in the fall of 1977. Under the "Scholar Program in Medicine," about ten premedical students will be admitted each year into the undergraduate division on the Hilltop Campus, with a commitment that they will ultimately be accepted into the Washington University School of Medi-

cine, provided they meet certain criteria, including maintaining at least a B average, meeting the School's admission requirements, and fulfilling the normal course distribution requirements of their undergraduate program. The students would be expected to pursue in depth at least one subject area of their choosing.

Most of the students are expected to take an accelerated program, receiving the bachelor's degree after the completion of four years and a medical degree three years later. Students would also have the option of changing from the Scholar Program to the regular AB or BS degree program if their interests or goals shifted. Two primary advantages are: 1) the program should reduce anxiety and encourage greater range and depth of education by allowing students to pursue educational objectives other than those related to gaining admission to medical school, and 2) it should attract additional outstanding undergraduate students, including some not enrolled in the Scholar Program when they enter the freshman class.

High standards of teaching, research, and scholarship are the norm in institutions of higher learning committed to excellence. In addition, Washington University has proved hospitable to an ambience of unusual creativity that sustains the efforts and lifts the horizons of faculty and students alike. The past year has been unusually productive in many fields. It is highlighted by a number of achievements in the area of literature. English Professor Stanley L. Elkin's most recent novel, *The Franchiser*, was widely acclaimed by reviewers across the country. Professor of English John N. Morris's *The Life Beside This One: Poems*, published by Atheneum, was nominated for the 1976 National Book Award in poetry. Howard Nemerov, Edward Mallinckrodt Distinguished University Professor of English, and Charles Hartman, graduate teaching fellow in English, received two of five prizes given this year by

Poetry magazine, considered the most important poetry magazine in the country. Nemerov was awarded the Levenson Prize; Hartman, The Bess Hokin Prize.

During the course of a year, poems by Nemerov, Donald Finkel, poet-in-residence, and Mona Van Duyn, co-editor of *Perspective, a Quarterly of Literature*, appeared in magazines with broad national circulation, including *The New Yorker*. Miss Van Duyn and her husband, Jarvis A. Thurston, Professor of English, are the founders as well as co-editors of *Perspective*, one of the most prestigious of the "little magazines." In addition to faculty in the Department of English, the Washington University writers' colony includes William H. Gass, novelist and Professor of Philosophy. Professor Gass is well known as critic and reviewer for *The New York Review of Books*.

Overall faculty productivity is evidenced in the number of publications and creative activities compiled by the Washington University libraries. The 1975 bibliography includes 1638 articles, monographs, and compositions and thirty-five performances and exhibits. Of general interest to professional and lay readers alike is Psychology Professor Jane Loevinger's *Ego Development: Conception and Theories*, the summer selection for distribution through the Behavioral Sciences Book Service.

Still another index of faculty endeavor is the number of educational and research projects supported by external sources. Because of the reputation of the faculty and its teaching programs, the University attracts considerable federal and private funding for special projects. In 1975-76, grants and contracts totaling \$42.5 million were awarded to Washington University for 560 projects. Of this amount, \$38.2 million represents federal commitments.

Finally, it is interesting to note the achievements of a former faculty member and administrator who has continued to serve the Univer-

sity through his membership on the Board of Trustees. George E. Pake joined the Department of Physics in 1948. His association with the University was interrupted by a nine-year break, from 1956 to 1965, when he was at Stanford University. On his return to this insti-

tution, he served as Executive Vice Chancellor and Provost. He was Edward Mallinckrodt Distinguished University Professor in 1970, when he left to join Xerox Corporation. He has been a Washington University Trustee since 1970. In 1971, Pake was honored by election to

the Institute of Medicine of the National Academy of Sciences and this year to the parent organization itself, the National Academy of Sciences. At present, eleven members of the Washington University faculty belong to the Academy or its Institute of Medicine.



**Faculty of Arts and Sciences—
Merle Kling, Dean**

The Faculty of Arts and Sciences, during 1975-76, happily refused to join the national chorus singing dirges over the plight of the liberal arts. As aware as their colleagues elsewhere of the preoccupation with preparation for careers of today's students, the faculty here responded with imaginative curricular adaptations, confidence in the enduring value of academic excellence, and renewed dedication to the calling of teaching.

Thus, the undergraduate division, the College of Arts and Sciences, under the tactful and patient leadership of Dean Burton M. Wheeler, in the fall semester introduced Focus, a program designed to achieve a more coherent and effective program of study for freshmen. The four separate sequences of courses, each developing a general topic, attracted 115 students. Participating faculty worked with seminar leaders to effect an integration of course materials. Informal, out-of-class meetings between faculty and student participants, moreover, fostered an earlier social integration of students into the university community.

The evidence is strong that Focus was unusually successful even in its first year. In March, a questionnaire was sent to all Focus students and to a control group consisting of an equal number of non-Focus freshmen. To the following representative statements, Focus students responded more positively than non-Focus students as indicated:

"Instructors are very interested in my academic needs and interests." Focus students responded more positively by 14 points.

"The quality of instruction has been very high." Focus by 10 points.

"My courses have been as interesting or more interesting than I expected." Focus by 23 points.

"What I study in one course is often of help to me in another." Focus by 18 points.

"On the basis of my freshman year I would definitely recommend Washington University to incoming freshmen." Focus by 22 points.

To a negative statement, "Most of my work this year has been dull and tedious," Focus students disagreed more than non-Focus students by 33 points.

For the first time, Washington University received a programmatic grant from the National Endowment for the Humanities. The 18-month, \$30,000 grant will support a new undergraduate degree program in English and American literature and history.

Individual members of the Faculty continued to accumulate honors, awards, and recognitions: Egon Schwarz, Professor of German, was named Rosa May Distinguished

University Professor in the Humanities; Howard Nemerov was appointed Edward Mallinckrodt Distinguished University Professor of English and national Phi Beta Kappa lecturer; Robert M. Walker, McDonnell Professor of Physics and director of the McDonnell Center for the Space Sciences, received an honorary degree from the Université de Clermont-Ferrand in Clermont-Ferrand, France; the poem of Donald Finkel, Professor of English, *Adequate Earth*, and the accompanying musical composition of Robert Wykes, Professor of Music, were presented by the St. Louis Symphony; J. Thomas Rimer, Chairman of the Department of Chinese and Japanese, received an award from the National Endowment for the Humanities to conduct research on the influence of France on modern Japanese intellectual and cultural history; Robert C. Williams, of the Department of History, received one of the first Kennan Fellowships to conduct research on Russian-American relations; Richard E. Dawson, of the Department of Political Science, was appointed Director of the Political Science Program of the National Science Foundation; Wayne Fields, of the Department of English, was appointed a Fellow of The National Humanities Institute; Glen Holt, of the Department of History, was appointed Research Fellow at the Chicago Historical Society; and Stanley L. Paulson, of the Department of Philosophy, was awarded a grant from the Alexander von Humboldt Foundation to carry on research in legal philosophy. Many members of the Faculty, of course, were recipients of grants from the National Science Foundation, the National Institute of Mental Health and other governmental and non-

governmental agencies. And the research and creative achievements of the faculty, often taking the form of books published during the year, proved too numerous to catalog in this Report. Two members of the Department of Music retired: Professors Leslie Chabay and Lincoln Spiess.

The Graduate School of Arts and Sciences, under the continuing

able leadership of Dean Ralph E. Morrow, conferred the largest number of doctoral degrees in the history of the University: 139 (of which 136 were Doctor of Philosophy degrees). This School also approved the establishment of a new degree of Doctor of Philosophy in Biological Sciences which will be awarded in the Division of Biology and Biomedical Sciences for study in any of the following fields: cel-

lular and developmental biology, molecular biology, neural sciences, plant biology, population biology and ecology. And the School, thanks to the imaginative affirmative action recruiting efforts of Assistant Dean James McLeod, achieved the highest proportions of enrollment of women and Blacks in its history: 47 percent of the student population was female and 9 percent Black.



**School of Architecture—
Constantine E. Michaelides, Dean**

A total of 333 students was registered in the School of Architecture in the fall of 1975. This number, the highest in the history of the School, included 187 undergraduates and 146 graduates, seventy-two women, eighteen minority, and eighteen foreign students. Sixty-eight of these indicated Missouri as their home state. For the fall of 1976 we are expecting an equal number of students to register, including a freshman class with the best academic profile ever.

Earlier in the year, the Schools of Architecture and of Engineering and Applied Science announced a new joint program for the fall of 1976. This program will admit a very limited number of students to an intensive six-year course of study leading to a Bachelor of Science in Engineering degree at the undergraduate level and to a Master of Architecture degree at the graduate level. Through this program both Schools hope to offer expanded opportunities for educa-

tion and to attract to Washington University young people with a special concern for the environment and for building technology.

Two major administrative appointments within the School were announced in the spring to become effective on July 1, 1976: Professor Frants Albert as the Director of the Master of Architecture and Urban Design program, and Associate Professor Carl B. Safe as Assistant Dean. Both individuals have made significant contributions to the development of the School since their earlier teaching appointments in 1970. Professor Albert will replace Professor Donald C. Royse, who will spend the 1976-77 academic year on leave. Professor Safe's position is a new one established in response to the increased administrative tasks within the School.

Distinguished architects continue to enlarge the learning experiences within the School through our semester-long visitor program: Theodore Seligson, an alumnus practicing in Kansas City, and Akira Ozawa, an associate of Fumihiko Maki from Tokyo, taught advanced design studios during the fall semester. During the spring semester, similar studios in architectural design and urban design were taught by Lou Saur, an alumnus practicing in St. Louis, and by Trevor Dannatt and Colin Dollimore, partners in the Trevor Dannatt architectural firm of London, England. Two new endowed funds were established this year in the School, honoring prominent St. Louis architects.

In early spring we were very happy

to accept a gift of \$50,000 from the family of the late St. Louis architect Harris Armstrong. This donation will create the Harris Armstrong Fund. Its income will be used to enrich our academic programs and to honor Harris Armstrong's name before the faculty, students, and the public. The George J. Maguolo Fund was established with a \$25,000 legacy from the late George J. Maguolo, who received the Bachelor of Architecture degree in 1917. It will provide income to assist the School in meeting its educational goals.



**School of Business and Public Administration—
Nicholas Baloff, Dean**

New administrative leadership and a new goal have been the salient developments at the School of Business and Public Administration during the last year. As of June 1, Dean Karl Hill retired and Associate Dean Gilbert Whitaker accepted the business deanship at Texas Christian University. During their tenure, Deans Hill and Whitaker worked consistently to establish a foundation upon which the School could continue to increase the quality and stature of its programs. Dean Hill's personal dedi-

cation and professional achievements are well known by many students, faculty members, and business leaders.

A major development goal has been carefully defined with Chancellor Danforth's guidance and support. Our goal is to build the School into a nationally recognized leader in management education and research within a seven-year time period. This ambitious goal is both exciting and challenging, but we are confident that it can be achieved. Our confidence is based upon a conviction that quality management education and research are now widely accepted as fundamentally important to continued economic prosperity and societal advancement in the United States—that the *management* of natural and human resources and industrial technology are crucial to our future progress.

Several current trends support this conviction. First, our student body continues to grow in quality and size. Our entering freshman class has academic credentials that are outstanding at Washington University, and applications for our M.B.A. program have increased by

50 percent in two years. Second, within the University there is increasing interest in interdisciplinary programs which will develop the management skills of individuals trained in other professions. Third, there is a growing attitude among St. Louis business leaders that this sophisticated metropolitan area needs and deserves a truly first-rate school of business.

The hard work required to achieve our goal has begun in several areas. Alternative developmental strategies are currently being studied by our faculty. Extensive remodeling of our building this summer will provide more effective learning and research facilities. New administrative staff members have been added to serve our student body more effectively. Additional faculty are being recruited. Plans are underway to assess how we can best serve the continuing management development and part-time education interests of the St. Louis business community.

These activities are merely a beginning, but they demonstrate a determination to fulfill our mandate to serve our student body, the University, and the St. Louis community with true excellence.



**School of Continuing Education—
John B. Ervin, Dean**

Program exploration and reorganization marked a good portion of 1975-76 for the School of Continuing Education. In addition to the usual activity in program develop-

ment, the staff was heavily involved in responding to a decision made this year to phase out the program in University College for part-time students seeking baccalaureate degrees in business administration and accounting. The program is being discontinued over a four-year transition period and is to be replaced by a new part-time baccalaureate program offered by the School of Business and Public Administration.

This action is expected to have a major impact upon University College, and many hours were spent in developing options for all of the students currently enrolled in business programs of University College. In addition, the staff of the School of Continuing Education has been actively engaged in ex-

amining a wide variety of new thrusts that must be developed if the School is to continue as a significant instrument for providing educational opportunity for adults. Many possibilities are under consideration:

(a) Already existing certificate programs are being redesigned so that they remain current and maximally useful to students. Some are being transferred to other academic departments so as not to conflict with certain accreditation guidelines. New certificate programs are in process of development by University College staff and university faculty members.

(b) Recruiting efforts are being reorganized to enable University College to acquaint a broader segment of the community with its programs.

(c) Assessment of continuing educational needs throughout the area is being undertaken, so that we may have more adequate understanding of how best to serve the community.

(d) Advertising and promotional efforts are being analyzed with a view toward improving effectiveness in these areas.

(e) Serious consideration is being given to development of credit options for some present noncredit offerings.

(f) Examination is being made of possible administrative mechanisms that might facilitate enrollment procedures for students reg-

istering in University College.

Several developments during the year were encouraging.

—The increase in tuition from \$40 to \$50 per unit had a minimal effect on enrollment. There was not a disastrous decline in the number of students registering, as there had been in previous years of tuition increases.

—The summer session enrollment in University College was up slightly.

—The Master of Data Processing program got off to a good start; the program looks like a valuable addition to the offerings of University College.

—The Division of Professional and Community Programs continues to grow with a broader range of offerings in several subject areas. While we have not achieved the kind of balance between income and expenditures we are pushing toward, it was encouraging to note a sharp increase in income over last year.

In many ways, 1976-77 will be a year of challenge and change, but the vitality existing within the School of Continuing Education clearly indicates that these challenges will be met with vigor and imagination.



**School of Dental Medicine—
John T. Bird, Dean**

of dental hygiene schools are eligible for a two-year course leading to a Master of Dental Hygiene Education degree. The course is the only one of its kind, as far as we know, where teachers of dental hygiene are trained to teach a specific portion of dental subject matter, which in this case is pathology.

The staff has been enhanced by the addition of three full-time faculty members, including Dr. Hisatoshi Tanaka, who comes from Ohio State University to Washington University as head of the Department of Removable Prosthodontics.

Dr. David W. Barnes was appointed as Assistant Dean for Clinical Affairs, the first time that full-time responsibilities for clinical activities have been assigned to one person. As a result of this appointment, it is anticipated that the dental clinics will be enabled more efficiently and effectively to serve the community.

The 6000 square-foot addition to the west side of the School of Dental Medicine is completed and functioning to great advantage. Space for future expansion is available as a result of the School's recent purchase of 40,000 square feet of the building adjacent to the east of the present facilities.

Dr. Leroy R. Boling, Dean Emeritus and Professor of Anatomy, retired at the end of the year with the rank of Professor Emeritus of Anatomy. His many years of administrative and teaching service to the School are held in the highest regard.

Some months ago, I announced my intention to resign at the close of the 1976 fiscal year. The search for a new dean to serve as my successor culminated in the selection of Dr. George D. Selfridge, who recently retired as Rear Admiral of the Navy and Commanding Officer of the Naval Graduate Dental School.

The class graduated in June was the first to have completely experienced the new three-year curriculum for dental students. There are advantages and disadvantages to the new program, with the negative factors seeming, to the faculty, to outweigh the positive. The faculty and administration are now discussing whether to return to the conventional four-year schedule.

The new advanced program in Oral Surgery continues its developmental expansion and is being well received in the School's dental clinics and in the three hospitals in which it operates. A new program has been developed by the Department of Oral Pathology and approved by the faculty. Graduates



**School of Engineering and Applied Science—
James M. McKelvey, Dean**

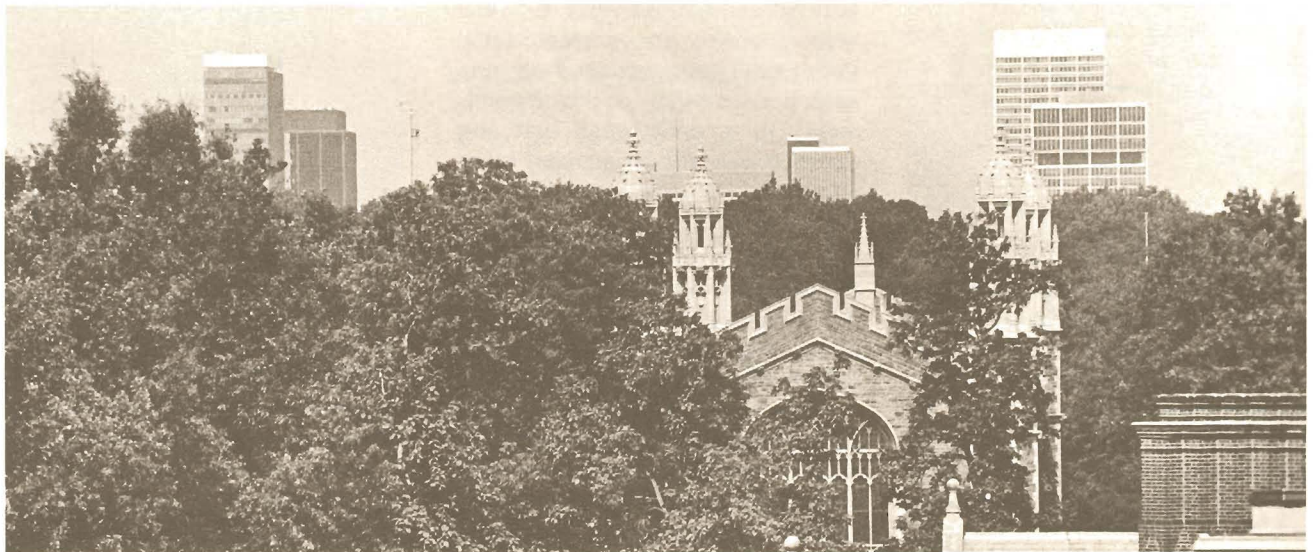
The 1975-76 recruiting season was very successful. Our target of registering approximately 200 freshmen was exceeded for the second year in a row. We also experienced a substantial increase in transfer students, and we now have a sizable number of dual degree students who are enrolled in our three-two program. Under this program, students spend three years at a designated liberal arts college, coming here for a final two years of professional undergraduate work. After five years of study, they receive the baccalaureate from their college and the engineering degree from Washington University. Overall undergraduate enrollments are therefore considerably larger as we enter the 1976-77 academic year. The School is now

close to its capacity both in facilities and staff. Because the recent growth has not been uniform across all departments (chemical engineering has had a disproportionately large share of the new enrollments), we are already experiencing crowding in certain areas. On the other hand, the increased enrollments mean that we are operating in a more cost-effective manner, so that significant improvements in the School's financial situation are occurring.

A new academic department, Technology and Human Affairs, was created in the School during the past year. This new department joins our four traditional engineering departments—chemical, civil, electrical, and mechanical—and our two applied science departments—computer science and systems science—to become the seventh academic department of the School of Engineering and Applied Science. Professor Robert P. Morgan was named chairman of the Department of Technology and Human Affairs. The establishment of the department culminates eight years of planning and development by Professor Morgan and his associates. It makes Washington University one of the first major institutions to establish an academic department in this new and important field concerned with the large scale effects of technology on human well-being.

The electrical engineering search committee completed its work in February when it made the unanimous recommendation that Professor Donald Snyder be named chairman of the Department of Electrical Engineering. Professor Snyder has been a member of the faculty for the past seven years. He has done important work in the field of digital communication theory. We look to Professor Snyder to provide strong leadership to the largest department of the engineering school.

During the past year the School of Engineering and Applied Science filled vacancies in two of its endowed chairs. Professor Barna A. Szabo was named the A. P. Greensfelder Professor of Civil Engineering and Professor William S. C. Chang was named the Samuel Sachs Professor of Electrical Engineering. Professor Szabo is an expert in the field of computer aided stress analysis of structures, while Professor Chang is well known for his work in quantum electronics and its application to highly sophisticated electronic devices. Professor Pierre Honnell, after thirty years of service to the electrical engineering faculty, retired and was named Professor Emeritus. Professor Honnell's immediate plans are to continue his research on the Matrix Computer.





**School of Fine Arts—
Lucian Krukowski, Dean**

Our anticipation, in the spring of 1975, that this year's entering class would prove to be, in quality and in numbers, a particularly good one was well justified. Our freshman sections were full—some said too full—and the faculty reports on student performance were largely favorable. No one here, however, is sanguine about long-term enrollment prospects. The struggle to at-

tract highly qualified students will continue for some time; a decrease in the number of young people applying for entrance to the School of Fine Arts in 1976-77 attests to the degree of difficulty involved. We remain optimistic, however, and look forward to working constructively with the new Director of Admissions.

Graduate enrollment and graduate placement continue to be excellent. The first-year class in the M.F.A. program is a large and promising one; we anticipate an exciting thesis exhibition next year. We are well ahead of national averages in the placement of our M.F.A. graduates in college-level teaching positions.

A Visiting Artists and Critics Grant from the National Endowment for the Arts allowed us to bring in major artists and designers to lecture and to meet with students. Eleven such visitors of national reputation were in residence briefly during the year. Another guest of particu-

lar distinction was the painter and critic Alice Neel, who came here through Washington University's participation in the Art Coordinating Council of the area.

The Art School will undergo reaccreditation by the National Association of Schools of Art during this coming year. The preparation of documents on the School's structure will give Acting Dean Hylarie McMahon, faculty, and student representatives a particularly good opportunity to reexamine our directions and goals.

Creative activity of faculty continued to be high this year. Solo exhibitions were mounted by William Fett, David Hershey, William Kohn, Lucian Krukowski, Hylarie McMahon, and Kim Strommen. William Quinn and Von Eisenhardt participated in group exhibitions. Critical response to these exhibitions was quite good. A number of alumni and students also exhibited their work in various parts of the country.



**School of Law—
Edward T. Foote, Dean**

Continuing its nationwide search for distinguished senior scholars, the School of Law has appointed F. Hodge O'Neal, formerly of Duke University, to its faculty as George Alexander Madill Professor of Law. Professor O'Neal, author of six books, is the country's preeminent authority in the field of close corporations. He has been on the Duke faculty for eighteen years, in-

cluding a period as Dean.

With recent appointments, the law faculty has thirty full-time members, including a scholar from The Columbia University Law School, the librarian, and two clinical teaching fellows. Ten of these individuals have been appointed in the last three years.

Professor Gray Dorsey organized and hosted the quadrennial World Congress of the International Association for Philosophy of Law and Social Philosophy in St. Louis last fall, attended by 276 scholars from all over the world. He is now president of that organization. Professor Robert G. Dixon has been appointed a member of The Administrative Conference of the United States. Professor Ronald Carlson received the Founders Day student-alumni teaching award, the fourth law faculty member to be so honored in recent years. Professor Gary Boren is the new director of the Graduate Tax Program, replacing Professor Dale Swihart.

These faculty members have completed and/or published books during the year: David Becker—*Legal Checklists*, 1975 Supplement; Ronald Carlson—*The Danger of Witnessing and Ladd & Carlson on Evidence*, 1976 Supplement; James Chandler—*Computers, Logic, and Law Cases and Materials* (co-author Layman Allen, University of Michigan); Jules Gerard—*Sum and Substance of Constitutional Law*; Frank Miller (with others)—*Criminal Justice Administration*, casebook, *Sentencing and the Correctional Process*, casebook, *The Juvenile Justice Process*, casebook, *The Police Function*, offprint in paperback of the first half of the *Criminal Justice Administration*, *The Adjudication Function*, offprint in paperback of the second half of *Criminal Justice Administration*, *The Mental Health Process*, casebook; F. Hodge O'Neal—*Oppression of Minority Shareholders*, 1975 Callaghan.

Again, applicants outnumbered places available in the freshman

class ten to one, despite a slight national decline in the number of those seeking to attend law school. The Moot Court and International Law Moot Court teams have competed successfully in regional meets. For the first time, the law school was represented in the regional and national Patent Law Moot Court competition. The Board of Trustees has approved a new program leading to the degree of Master of Juridical Studies, designed for professionals in other fields who wish to study the law

formally but not for the three-year period required for the J.D. degree.

The new wing, completed in time for the opening of the 1975 fall term with two classrooms, library and office space, is named in honor of the late George F. McMillen, friend and benefactor of the University, from whose estate a generous gift was made to the School of Law. Scholarship funds have been established in honor of the late Ethan A. H. Shepley, former Chancellor of the University, the

late George Woodruff Marsalek, and the late Walter L. and Hazel W. Roos. A Law Library Association, composed of those alumni and other members of the bar who use the law library and contribute toward its maintenance, has been established. The Alumni Association Executive Committee has reorganized its responsibilities to include direct assistance with annual giving, the result being the highest percentage of alumni supporting the school financially in its history.



**School of Medicine—
M. Kenton King, Dean**

The School of Medicine has had a good year. On July 1, 1975, Dr. Donald C. Shreffler joined our faculty as Professor of Genetics in the newly formed McDonnell Department of Genetics. He is also serving temporarily as acting head of the Department. Dr. Shreffler came to us from the University of Michigan School of Medicine, where he was a Professor of Human Genetics. He is an international leader in the study of the organization and function of the H-2 gene complex. This complex is a small segment of one chromosome which carries factors that cause transplantation rejections and control immune responses in laboratory mice.

On July 17, 1975, Dr. Virginia V. Weldon was appointed Assistant to

the Vice Chancellor for Medical Affairs for Governmental Relations. In this role she has been serving ably as a liaison officer between the medical center and various governmental agencies concerned with medical affairs. Dr. Weldon is an active member of the staff of the St. Louis Children's Hospital.

On October 2, 1975, Dr. Arthur L. Prensky became the first Allen P. and Josephine B. Green Professor in Pediatric Neurology. This is the first chair in this field in the country. Dr. Prensky has been associated with the School of Medicine and St. Louis Children's Hospital since 1967. He is studying the developing brain during disease and the recovery from nonspecific neonatal insults such as starvation.

On December 9, 1975, Dr. Philip Needleman, a member of the faculty since 1967, was named Head of the Department of Pharmacology, effective July 1, 1976. In 1974, he received the John Jacob Abel Award of the American Pharmacology Society. This research award, the highest in the field of pharmacology, is given to the outstanding young pharmacologist in the United States. Dr. Needleman's major research interest has been in the area of vasoactive biosynthesis and the regulation of kidney-heart function. He succeeds Dr. Oliver H. Lowry, who has relinquished his administrative duties but is active-

ly engaged in his research. Dr. Lowry is one of the most distinguished members of our faculty. We are greatly pleased that he is continuing his important work in this School to which he has brought so much honor.

On April 7, 1976, Dr. Mabel L. Purkerson was appointed Assistant Dean for Curriculum, effective July 1, 1976. A member of the Department of Medicine, she has been very active in the study of the diseases of the kidney. In her new role, Dr. Purkerson has wide responsibility for the curriculum in the School of Medicine and serves as an advisor to students.

On June 1, 1976, Dr. William A. Peck joined the faculty as John E. and Adaline Simon Professor of Medicine and Physician-in-Chief at the Jewish Hospital. An internationally known endocrinologist, he comes to us from the University of Rochester, where he was Professor of Medicine and Biochemistry.

The total enrollment of students in the School of Medicine continues to rise, having increased from 401 in 1971 to 541 in 1976. The quality of our students remains very high. The 1975 entering class carried an undergraduate grade point average of 3.64 on a scale of 4. They were selected from an applicant pool of 6387 students, which represents 53 applicants for each available place in the first-year class.



**The George Warren Brown
School of Social Work—
Shanti Khinduka, Dean**

The George Warren Brown School of Social Work had another eventful year in 1975-76. Enrollment was again high, with students coming from more than thirty-five states and several foreign countries. The quality and caliber of students remained impressive.

Professors Ralph Pumphrey and Edward Schwartz, and Mrs. Mary Hutton, Director of Learning Resources, retired after many years of distinguished service to the University. Mrs. Mary E. Aversa was appointed the new Director of Learning Resources and Dr. David L. Cronin, the new Director of Practicum. A nationally recognized analyst of social security and income

maintenance, Dr. Martha Ozawa, has joined the faculty as Professor of Social Work. In addition, three other new faculty have received full-time appointments in the School of Social Work.

The faculty and alumni were saddened by the death of Associate Professor Morris Wortman last January. The School has established the Annual Morris Wortman Memorial Institute for Marriage and Family Education in his memory.

After more than one and a half years of intensive study and discussion, a revised curriculum with four core courses, three areas of concentration, and half a dozen fields of specialization has been approved by the faculty for the Master of Social Work program. It is being inaugurated this fall. The revised curriculum offers students both a core structure and a great deal of flexibility for individually designed programs. It seeks to develop specific competencies in student performance. The School has entered into an informal agreement with the Hebrew Union College of Jewish Communal Service so that selected students can now obtain in two years both a Master of Social Work degree from Washington University and a Master of Arts in Jewish Communal Service from Hebrew Union College.

The physical facilities in Brown Hall, now in its fortieth year, are being renovated and modernized. The Social Work Library is being expanded. With the construction this summer of new seminar rooms, faculty offices, audio-visual studios, and simulation rooms, the School will have one of the most modern Learning Resources Centers in the country.

In May, a two-day conference on "Trends and Issues in Social Work Practice" was held to celebrate the fiftieth anniversary of the founding of social work education at Washington University. Alumni from twenty-three states and from Puerto Rico and the District of Columbia participated in this conference. Several deans of social work schools, executives of national organizations, and social work practitioners in various public and private agencies—all alumni of the School—were in attendance. Chancellor Danforth announced the establishment of the Bettie H. Bofinger Brown Distinguished University Professorship in Social Welfare on this occasion. A nationwide search is being instituted to bring to Washington University a scholar of eminence with a reputation for pioneering work in social welfare.



Financial Condition Of the University

Adequate financing is a necessary prerequisite to maintaining the prime objective of Washington University—providing a high quality educational experience. Our total University finances in fiscal year 1975-76 provided such a sound base. A number of favorable factors aided us. Income was increased by higher tuition and a growth in the support of sponsored projects; the expenditures were kept down by further economy measures and a slowing of inflation. However, expectation of future price increases continues to present the University with serious challenges for the next year.

Below is a brief analysis of total expenditures and income, the results of the University's separate fiscal units, University assets, and investment.

Total Expenditures And Income

EXPENDITURES

The total operating expenditures of Washington University in fiscal year 1976 amounted to \$121,056,000.

In 1975, this figure amounted to \$105,215,000. The breakdown of expenditures has changed to more appropriately present expenditures by functional category. Approximately 42 percent of the increased expenditures was attributable to instruction and student aid. Research, primarily supported by outside agencies, accounted for another 21 percent of the increase, and 15 percent of the increase occurred in organized patient care activities, such as the Edward Mallinckrodt Institute of Radiology. The remainder of the increase was divided between operation and maintenance of plant, auxiliary enterprises, academic support, institutional support, and student services.

Capital expenditures for buildings were \$6,367,000. Investments in all physical facilities, including build-

ings, land, equipment, and library acquisitions, increased \$10,978,000.

Included in operating expenses is student aid, amounting to \$10,059,000 from University income and from governmental and private sources. Student loans are not expended from current funds—their source is a separate fund category. Student loans issued during fiscal year 1976 totaled \$3,022,000.

INCOME

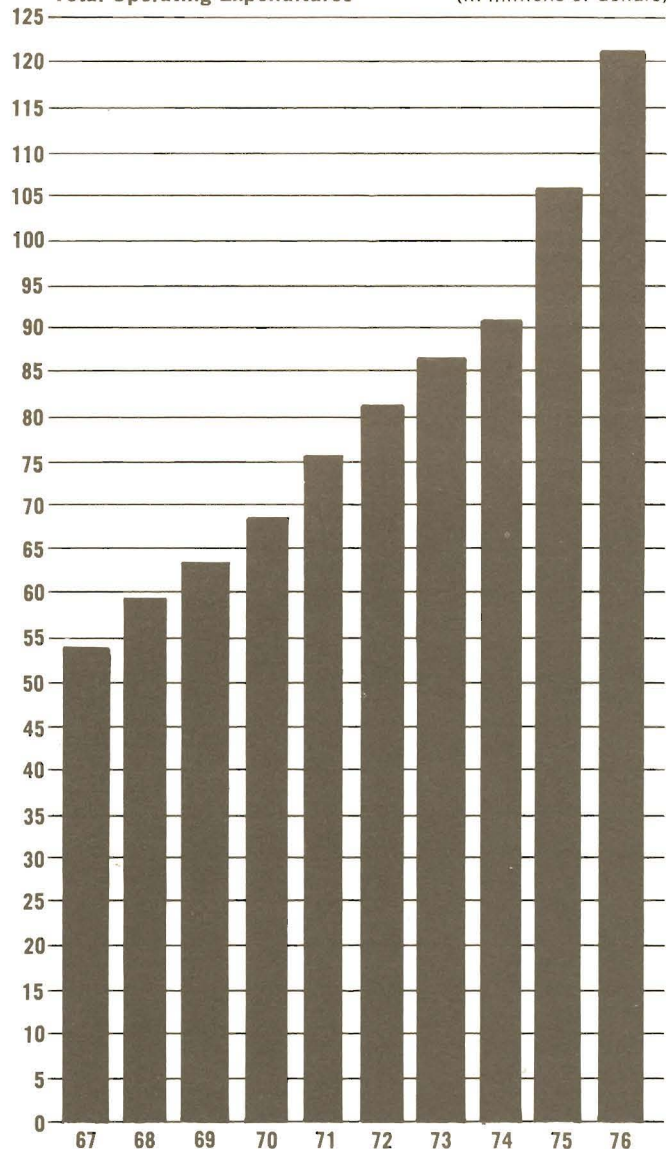
The University has four major sources of support for activities represented by its expenditures. These are:

Operating Revenue

Total operating income, primarily from payments by those who benefited directly from the University's operation, amounted to \$64,955,000. Student tuition and fees accounted for \$26,813,000. Patient and laboratory fees for medical services provided by faculty and staff amounted to \$14,795,000. Income from organized patient care activities, such as the Edward Mallinckrodt Institute of Radiology, was \$11,856,000. The auxiliary enterprises, including residence halls, food service, and book stores, had income of \$6,945,000. Other mis-

Ten Year Comparison of Annual Expenditures

Total Operating Expenditures (in millions of dollars)



cellaneous operating revenues totaled \$4,546,000.

Government Grants and Contracts

A large portion of the research done by the University is sponsored by grants and contracts from governmental agencies, mostly federal, for specific sponsored projects. Total income from governmental sources expended in fiscal

year 1976 was \$42,246,000, an increase of \$4,911,000 as compared with the previous year. Included in this total is \$3,146,000 for scholarships and traineeships, an increase of \$652,000 as compared with the previous year. In addition, \$2,296,000 of student loan funds issued was 90 percent funded by the Federal Government.

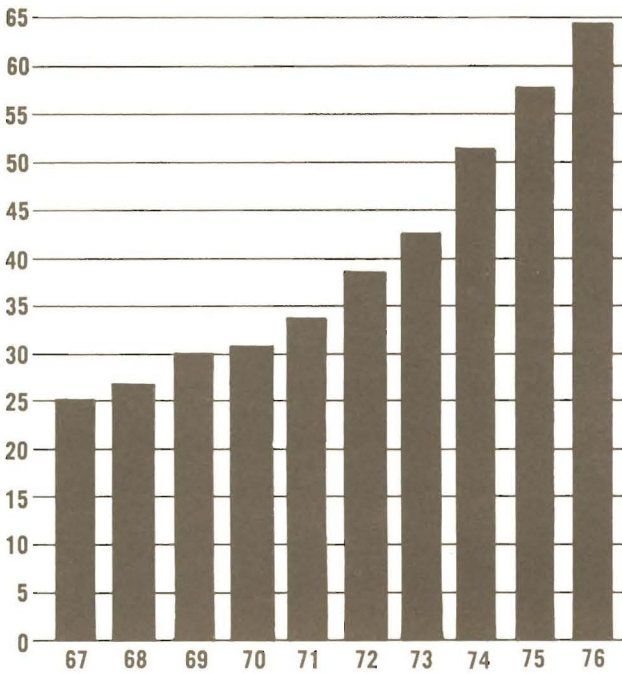
Private Gifts, Grants, Contracts, and Bequests

Washington University received a total of \$16,942,000 in gifts, grants, and bequests from private sources. In addition, \$483,000 in private contracts was received during fiscal year 1976.

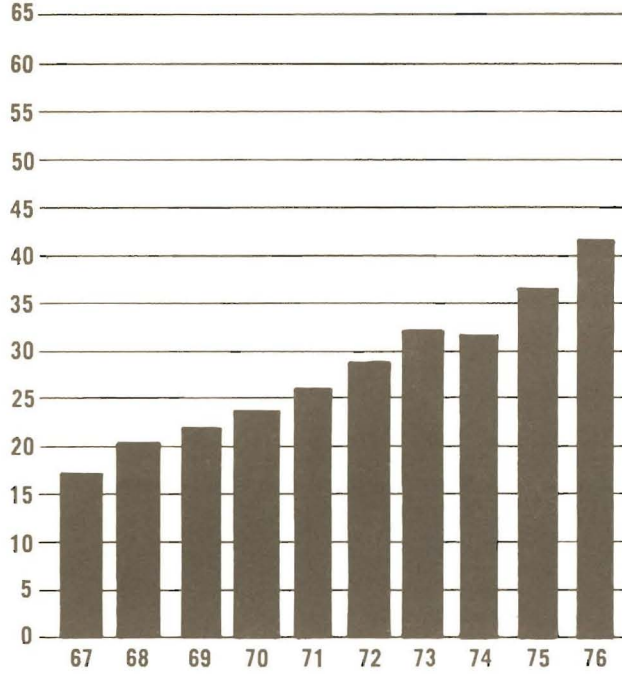
Support from private, non-governmental sources for operating pur-

Ten Year Comparison of Income by Source (in millions of dollars)

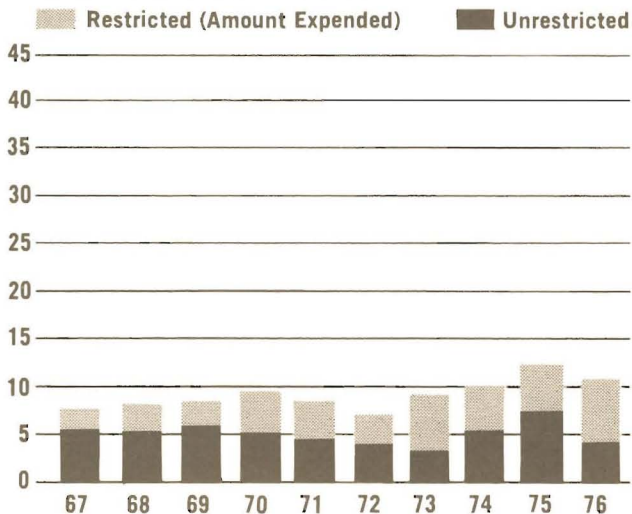
Revenue from Tuition and Services



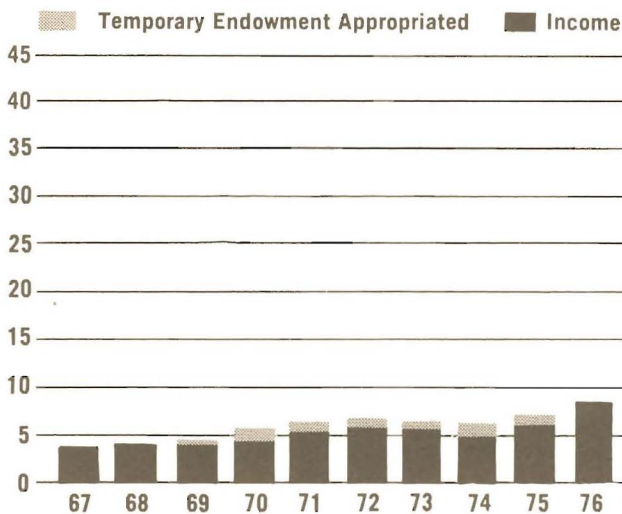
Income Expended from Government Grants and Contracts



Private Gifts, Grants, Contracts and Bequests Recognized as Operating Income



Endowment Resources Appropriated for Operating Purposes



poses totaled \$14,456,000, of which \$10,742,000 was recognized as current income. Unrestricted gifts received totaled \$4,126,000, which included \$2,600,000 from the Danforth Foundation. Received for sponsored projects was \$10,330,000, of which \$6,616,000 was spent and recognized as income during the fiscal year 1976, with the re-

mainder being held for future expenditures on these projects. The ten-year chart reflects a large Ford Foundation grant for the years 1967-70.

In addition to gifts for operating purposes, \$2,296,000 was given for endowment, \$657,000 for plant, and \$16,000 for student loans.

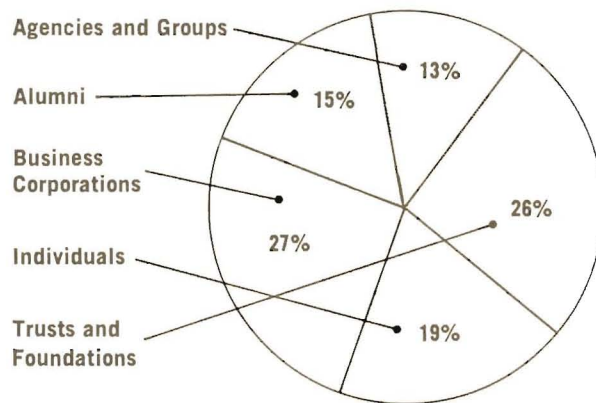
Major sources include alumni, individuals, business corporations, and foundations. A separate chart presents a breakdown of the total by source and by purpose.

Endowment

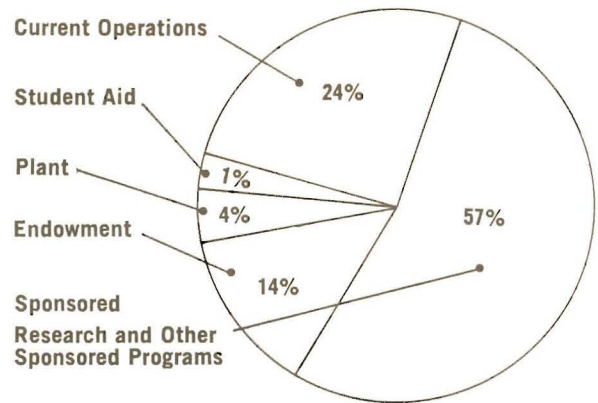
The investment of endowed funds resulted in \$8,144,000 used to support operating expenditures.

Private Gifts, Grants and Bequests Received

Source



Purpose



Total Private Gifts, Grants and Bequests—\$16,942,000

Operations of Separate Fiscal Units

An unusual characteristic of Washington University and a few other private universities is the long-established policy of making professional schools independent fiscal units wherever possible. Each independent unit is responsible for supporting with its income the expenditures related to its operation; each maintains an individual reserve of funds.

The Schools of Dental Medicine, Law, Medicine, and Social Work have been independent units for

some years. The School of Engineering has recently achieved reserve status, but received a subsidy from the central unit in fiscal year 1976. The central unit includes the Schools of Architecture, Arts and Sciences, Business Administration, Continuing Education, and Fine Arts, plus general university activities and services such as Olin Library.

The central unit is reimbursed for services rendered to the independent units. Although the budgeted deficit for the central unit for fiscal year 1976 was one million dol-

lars, the actual deficit was \$584,000. The Schools of Medicine and Dental Medicine completed the year with income in excess of operating expenditures and reserve transfers, while the School of Engineering ended the year with a small deficit. The Schools of Law and Social Work had planned the use of reserves (transfers) for plant and other projects, which caused these two schools to end the year with reduced reserve balances. A Summary of Current Funds Revenues, Expenditures, and Transfers from Reserves follows.

**SUMMARY OF CURRENT FUNDS REVENUES,
EXPENDITURES AND TRANSFERS FROM RESERVES
FOR SEPARATE FISCAL UNITS OF THE UNIVERSITY
FOR FISCAL YEAR 1976**

	Central Fiscal Unit	School of Engineering	School of Law	School of Social Work	School of Dental Medicine	School of Medicine and Related Activities	Other Independent Organized Activities ^(a)	Total
Thousands of Dollars								
Revenues:								
Tuition and fees	\$17,724	\$2,760	\$1,966	\$ 921	\$1,241	\$ 2,201		\$ 26,813
Government grants and contracts, including all overhead	5,778	2,738	57	254	586	31,962	\$871	42,246
Private gifts	3,082	587	115	6	106	4,246		8,142
Gifts from the Danforth Foundation	2,600							2,600
Endowment income ^(b)	2,577	524	329	309	23	4,382		8,144
Sales and services—educational activities	706	102	17	1	11	1,493		2,330
Sales and services—auxiliary enterprises	5,640					1,305		6,945
Patient and laboratory fees					831	13,964		14,795
Organized patient care activities —sales and services						11,856		11,856
Other income and additions	(47)	134	44	22	78	1,973	12	2,216
Total revenues	38,060	6,845	2,528	1,513	2,876	73,382	883	126,087
Expenditures and mandatory transfers:								
Instruction	14,097	2,724	925	585	1,868	25,587		45,786
Research	3,095	1,854	26	2	44	20,106	613	25,740
Academic support	3,621	488	811	413	407	1,647	158	7,545
Student services	1,936	301	92	69	95	585		3,078
Institutional support	2,186	259	107	78	112	2,826	32	5,600
Operation and maintenance of physical plant	2,587	435	203	137	225	4,740	4	8,331
Scholarships and fellowships	4,780	882	321	103	47	806		6,939
Organized patient care activities						10,772		10,772
Auxiliary enterprises	5,311					1,086		6,397
Miscellaneous services	5					13		18
Mandatory transfers	781				7	62		850
Total expenditures and mandatory transfers	38,399	6,943	2,485	1,387	2,805	68,230	807	121,056
Transfers to plant and other funds from revenues and prior years' accumulated reserves	245	(94)	85	172	(69)	3,700	176	4,215
Total expenditures and trans- fers	38,644	6,849	2,570	1,559	2,736	71,930	983	125,271
Net effect of revenues, expenditures and transfers on reserves	\$ (584)	\$ (4)	\$ (42)	\$ (46)	\$ 140	\$ 1,452	(\$100)	\$ 816

(a) Other independent organized activities are Computer Systems Laboratory and the Euclid Power Plant.

(b) Endowment at market value with income for:

Support of current operations	\$53,301	\$8,292	\$6,238	\$5,027	\$ 347	\$94,667	\$167,872
Other purposes	5,421	186	25		5	3,234	8,871
Total endowment	\$58,722	\$8,478	\$6,263	\$5,027	\$ 352	\$97,901	\$176,743

University Assets

Institutions of higher education and other not-for-profit organizations keep their financial resources in the form of funds to comply with the wishes of donors and to account properly for government grants and contracts. A separate fund is established for each project or purpose. The thousands of funds for which Washington University is accountable are handled in four major groupings: current funds, student loan funds, endowment funds, and plant funds. Except for income from endowment, the resources in special-purpose groupings are not available to offset ongoing operating expenditures of current funds. The Summary of Assets, Liabilities, and Fund Balances as of June 30, 1976, presents the assets and any claims against them for the four fund groupings.

Current funds must be separated between unrestricted and restricted funds. The unrestricted current funds consist of revenues from the various income-producing operations of the University, plus unrestricted gifts and unrestricted

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

As of June 30, 1976, the total assets of the current funds were \$34,889,000, including restricted current funds of \$12,594,000 and unrestricted current funds of \$22,295,000. Accounts payable and other such liabilities against unrestricted current funds amounted to \$4,622,000. Another \$5,829,000 of the unrestricted current funds assets was encumbered or otherwise administratively committed for specific future purposes.

The reserves that are uncommitted totaled \$16,762,000. To be deducted from that amount is the deficit of \$4,918,000, accumulated over several years of insufficient income to cover the expenditures of the central fiscal unit.

The uncommitted reserves are those built up over the years by the independent fiscal units. By long-established policy of the Board of Trustees, these reserves are held available for use in future operations of the fiscal units by which they were generated. Their presence has removed the necessity for the central fiscal unit to go to lending agencies outside the University to obtain the additional funds necessary to meet its expenditures. The central fiscal unit has an obligation to return to the independent units the amounts drawn from their reserves.

Student loan funds totaled \$15,401,000. The total student loan funds receivables was \$13,616,000, of which notes receivable from current and former students amount-

SUMMARY OF ASSETS, LIABILITIES, AND FUND BALANCES AS OF JUNE 30, 1976

Thousands of Dollars	Current Funds		Student Loan Funds	Endowment Funds	Plant Funds
	Unrestricted	Restricted			
Assets:					
Cash and securities maturing within thirty days . . .	\$ 7,249	\$ 5,220	\$ 1,447	\$ 4,915	\$ 6,394
Investments	9,041	6,512	600	153,810	5,754
Receivables	3,690	862	13,616		2,377
Plant	52				164,039
Other	2,263		90	7,740	
Total Assets	\$22,295	\$12,594	\$15,753	\$166,465	\$178,564
Liabilities and Fund Balances:					
Liabilities	\$ 4,622	\$	\$ 352	\$ 8,295	\$ 14,835
Deficit	(4,918)				
Deferred undistributed investment income		485			33
Encumbered and committed reserves	5,829				
Uncommitted reserves of independent units	16,762				
Balance of funds		12,109	15,401	158,170	163,696
Total liabilities and fund balances	\$22,295	\$12,594	\$15,753	\$166,465	\$178,564

ed to \$13,560,000. Outstanding loans to students included \$11,122,000 under the National Direct and Health Profession loan programs, which were 90 percent funded by the Federal Government.

The book value of the endowment funds was \$158,770,000 (including \$153,810,000 in long-term investments), up \$10,372,000 from the year before. The market value was \$176,743,000. The market value associated with each of the separate fiscal units is presented along with the summary of expenditures and income for each unit.

Plant funds totaled \$178,564,000. Of that amount, \$164,039,000 was invested in land, buildings, books, and equipment. Total borrowing for physical plant facilities as of June 30, 1976, was \$14,667,000, of which \$10,732,000 represents Housing and Urban Development bonds for student housing and dining facilities.

Investments

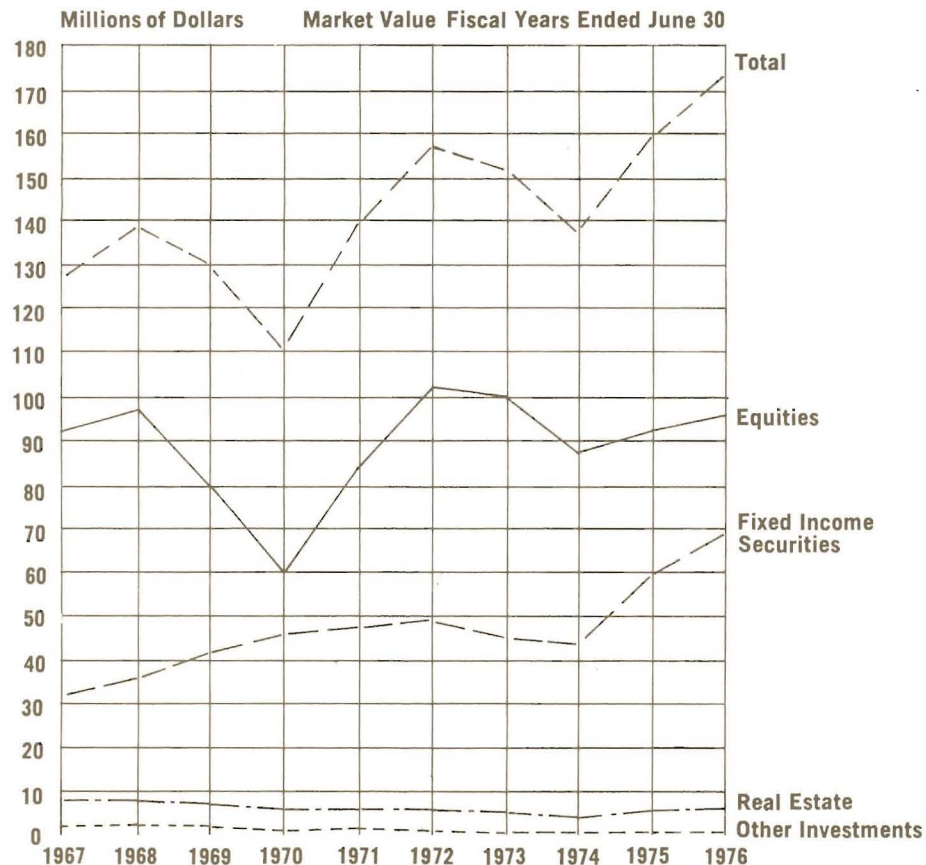
The market value of all investments (endowment, current, plant, student loans, and funds held for others), including interfund advances and those securities maturing within thirty days, totaled \$225,930,000 as of June 30, 1976, compared with \$212,554,000 the preceding year.

The market value of endowment investments held by the University, including the Capital Pool (which are funds functioning as temporary endowment and which are invested on a total return basis), was \$172,738,000 at June 30, compared to \$157,898,000 the preceding year. There were additions to endowment funds of \$9,747,000 during the year. A comparison of endowment investments held by the University (excluding \$4,005,000 held in trust for its benefit) over the past ten years is presented on the accompanying chart.

Income from all investments totaled \$11,602,000 and from endowment \$8,969,000 for the year, compared to \$11,909,000 and \$8,057,000 respectively the preceding year. Short-term interest rates were much lower during the year. Consequently, investment income on short-term investments, the majority of which are in current funds, was sharply reduced.

The University's computer program which measures the performance on a "time-weighted" basis computes the performance of all securities under the supervision of the University and their various investment advisors. The market value of the Capital Pool declined by 2.96% and income (interest and dividends) earned was 2.76%, giving a total return of -0.2% for the year. The other endowment fund securities (invested approximately 49% in fixed income securities) had a total return of 10.68% of which 5.98% was income.

Endowment Fund Investments Held by the University (Includes Capital Fund, Beginning July 1, 1968, Excludes Assets held by others)



Comments by the Chancellor



The 1975-76 academic year ended on a high note. The success of the \$60 million matching fund campaign is assured, approximately three years after the start of the campaign and two years before the final deadline. By June 30, 1976, we had reached a total of \$61.6 million in new gifts and pledges. It is difficult to know how to express appreciation to those who made the accomplishment possible: to the many donors, individual and corporate, for their marvelous generosity; to the Board of Trustees for planning and overseeing of the entire effort; to the alumni for supplying leadership and energy; to the staff for careful planning and follow-through; to the faculty whose talents and hard work not only won support for many projects but made the whole effort worthwhile.

When the \$60 million in new gifts is actually in hand, the matching \$60 million trust fund will be transferred to the general endowment of Washington University. It must always be remembered that the income from the added endowment will not bring new money into the operating budget. It will, however, assure permanency of the annual support that has been coming from the outside in recent years. Without a continuation of this income, there would have, of necessity, to have been a major dismantling of educational and research programs on the Hilltop Campus. With it we can plan for the decades ahead with reasonable certainty.

The \$61.6 million in new gifts and pledges has been given for a variety of purposes, including support for the operating budget, new construction, renovation of existing structures, endowment, scholarships, and research. Without this new income, Washington University would be a less vital and useful institution.

At the time of the announcement, I stated publicly: "I wish I could say that we have solved our financial problems once and for all. Of course, I cannot. Change is still with us; institutional adaptation

must continue. Unfortunately, inflation, although somewhat abated, still pushes our costs of operation upward. Problems remain. We have, however, reached a very important milestone. The period of financial danger is past. If we can not rest for long, we are at least justified in the feeling of relief and a sense of profound gratitude to all who have made success possible."

The space available is simply too short to thank all of those individuals who should be thanked for playing leadership roles in the organization and conduct of the campaign. However, special recognition should be given to the members of the University's Major Gifts Committee: George H. Capps, Maurice R. Chambers, Spencer T. Olin, Elliott H. Stein, Charles Allen Thomas, and the late David R. Calhoun; and to members of the University's Development Committee: Chairman Capps, Clark M. Clifford, W. L. Hadley Griffin, W. Alfred Hayes, Gladys W. Levis, Lee M. Liberman, Stanley L. Lopata, J. Peters MacCarthy, I. E. Millstone, Michael N. Newmark, Edward A. O'Neal, Edward J. Schnuck, Elliott H. Stein, Harold E. Thayer, and Richard K. Weil. In addition, recognition should be made of the work of Vice Chancellor Herbert F. Hitzeman, Jr., and his colleagues in the Development area for their essential role in the entire campaign.

A university does not exist in order to show a balanced budget. Its responsibility is to preserve, to enhance, and to transmit knowledge, skills, and wisdom. This responsibility, however, can be fulfilled only if the institution rests on a bedrock of financial support. Buildings must be heated in winter, faculty and staff must receive reasonable salaries, the bills must be paid. Furthermore, Washington University cannot stand still. It has not done so. It has evolved steadily, thanks to the vigor of the faculty and to the financial support coming from new gifts and pledges. As society has grown and become increasingly complex, so have most of its institutions, in-

cluding universities. Academic life is different from in the past. Change has quickened its tempo. Specialization, which has increased hand-in-hand with expanding knowledge, has required that communities of scholars be larger in size and that all of us spend larger fractions of our lives in formal education.

The great libraries of a generation ago could not possibly serve the present and oncoming generations. The proliferation of printed, recorded, and taped information that is with us today places relentless demands on modern library services. A free democratic society requires ever more of its thinkers and its innovators of all persuasions and types. New programs at Washington University have been undertaken in the last three years. Old ones have altered form and content. Few of these things could have happened without the generosity of our alumni and friends.

With these accomplishments it is difficult for those of us in the University to convince ourselves of the hard fact that we continue to face a period of financial stringency. It is perhaps easiest to visualize the situation by looking at the specifics. As noted above, the \$60 million coming from the Danforth Foundation provides no appreciable amounts of new money for the operating budget. The \$61.6 million in new gifts and pledges must then be examined closely. Unrestricted money from alumni and corporations available to the operating budget will probably total about \$8.5 million during the five-year period from 1973-1978. The average of \$1.7 million per year for support of the operating budget of the central fiscal unit is only somewhat ahead of the average of the preceding five years, \$1.4 million. The remaining \$53.1 million arrives earmarked for a variety of excellent purposes. These gifts, while adding to the total endowment of Washington University and underwriting capital improvements, strengthening academic programs and supporting special activities, do not necessarily supply the bread and

butter needs of this year or next. The result is that we continue to share with many other institutions of our country the need to scale down some of our expectations, to plan carefully, to operate frugally and, above all, to keep our expenditures within the resources given to us by society.

Alumni. The alumni of Washington University continued to be a great source of moral as well as financial support. The personal encouragement that so many have given to me is always an inspiration. The Alumni Board of Governors during last year kept on a steady course of improvement, building and strengthening its programs. Stanley L. Lopata, Chairman of the Board of Governors, and Michael N. Newmark, Executive Vice Chairman, have given excellent leadership as have the heads of the Standing Committees and the Council City Chairmen. During the three years of the campaign, the number of alumni making annual gifts increased from 5900 to more than 11,000, a jump of 86 percent. These annual gifts are especially valuable at a time when inflation is driving up the costs of essential ongoing operations such as the purchase of books and journals for the library, and the maintenance of the physical plant. At the same time that annual giving has increased, more and more alumni have volunteered their time and talents in a number of vital areas such as the recruitment of students and working with enrolled students as part of the Student-Alumni Relations Committee.

An offshoot of the Alumni Board of Governors, the Parents Council, continued to play an increasingly important role in helping develop good communication between the University and parents of current undergraduates. Charles Lipton of Greenwich, Connecticut, succeeds Howard Haas of Chicago as Chairman of the Parents Council. Special thanks go to Mr. Haas for his leadership during a critical growth period of the Parents Council.

Academic leadership. Washington University has ten different facul-

ties, each with its own student body, its own special mission, its own traditions and methods of operation. The faculties vary in size from the largest, Medicine, with 635 full-time and 718 part-time faculty members, to Architecture, with nineteen full-time and thirteen part-time faculty. The student bodies also differ greatly, varying from Arts and Sciences with 3959 full-time students and the School of Continuing Education with 2675 part-time and 3480 summer students, to the School of Dental Medicine with 309 students.

Each of these faculties is headed by a dean who is, in almost every case, an individual who has previously achieved stature in a very different kind of endeavor. The demands on a dean are many. A dean must plan carefully without imposing rigid structure. Diversity must be encouraged without lessening the cohesive spirit necessary for the success of the common enterprise. The conflicting needs of faculty and students and alumni and, in many cases, of professional groups must be balanced, and the requirements of federal and state governments met. The dean requires a dedication to academic ideals, to freedom of expression, to openness, to tolerance. He or she must recognize and respect intellectual excellence and yet have the practical ability to balance the budget.

Washington University has been extremely fortunate in the quality of its deans and their willingness to serve the institution, especially during a time when the rewards sometimes seem limited and the headaches sizeable, so that many institutions have had a hard time finding able individuals to take on these important tasks. The present period has, for a variety of unrelated reasons, been a time of change of leadership in five faculties.

Dean John T. Bird decided to seek a new career after nine years as Dean of the School of Dental Medicine. Dean Bird led the School successfully around some of the

most difficult obstacles that it has encountered in its 110-year history. He leaves the School with an entirely renovated physical plant and an excellent faculty and student body. His replacement, Dean George Selfridge, who brings a strong administrative and educational background to the position, will have a good foundation on which to build.

Dean John B. Ervin has announced that he will be leaving the School of Continuing Education at the end of the 1976-77 academic year after nine years as dean. Dean Ervin has brought to Washington University a concern and understanding for the part-time student and for how these students should fit in at this University. Moreover, Dean Ervin's breadth, his great energy and boundless good will, have made it possible to tap his wisdom for many facets of the University operation and for the benefit of many of the University's people. The search for Dean Ervin's successor is just now getting under way.

Dean Karl Hill has, for personal reasons, taken early retirement after eight years as head of the School of Business and Public Administration. Dean Hill's strength of character, his integrity and his vision for the School have been a great asset to Washington University. He leaves the School in excellent shape. His successor, Dean Nicholas Baloff, brings to the University a great ambition to further the work of Dean Hill and boundless energy, drive, and ambition to make his plans a reality.

Dean Merle Kling is completing his second term as Dean of the Faculty of Arts and Sciences. As soon as a successor can be identified, he will assume his new duties as Provost of Washington University. Dean Kling has served on the faculty since 1946. He knows the University intimately. He has won the respect and admiration of colleagues and students throughout Washington University. His devotion to academic excellence, his breadth and his understanding made him the unanimous choice of a search committee charged

with finding a Provost. This position has not been filled at Washington University since George Pake left the central administration.

Dean Lucian Krukowski late in the year announced his intention of returning to a full-time career as an academic. He will spend the next year on a leave of absence, painting, and then return to the faculty. Dean Krukowski brought to his position a first-rate intellect and dedication to the intellectual as well as the artistic sides of Washington University. He is an outstanding scholar and speaker as well as an artist. A search for his successor is being conducted. During the interim period, Professor Hylarie McMahon is serving as Acting Dean.

A listing of these changes in academic administration would be incomplete without mentioning the departure of University Vice Chancellor Lattie F. Coor to be President of the University of Vermont. Vice Chancellor Coor spent almost seventeen years at Washington University as a graduate student, a faculty member, and an administrative officer. He served as Vice Chancellor during the tenure of Thomas H. Eliot and for most of the first five years of my chancellorship. His boundless energy, his good will, his intelligence, his insight into the academic enterprise, added immeasurably to the quality of life and of the administration at Washington University.

Conclusion. Once again, my deepest gratitude to all who have made possible the successful conclusion of Washington University's largest fund campaign. We are not the first, nor will we be the last, to labor and to sacrifice that Washington University might continue to serve its students as an educational leader and the nation as a community of scholars dedicated to the highest academic standards.



William H. Danforth
Chancellor
September, 1976

Harriet Hosmer

(Continued from page 16)

sence of the one who wrought it and to preserve it as pure as the one who gave it to me."

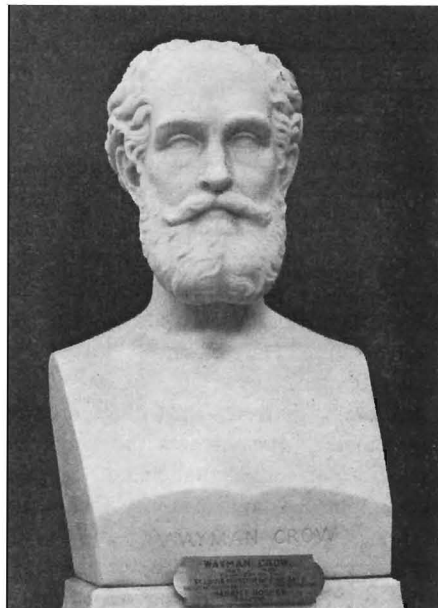
Soon after, while she was beginning to dream of going to Rome to sculpt, she created her first ideal sculpture, a bust of *Hesper* in 1852. Charlotte Cushman, a famous actress and lecturer from Boston with whom Harriet later lived for a time while in Italy, chanced to see it. She urged Harriet to go to Rome to join a group of expatriate artists and sculptors there. In 1852, Harriet, her indulgent father, and Miss Cushman sailed for Europe, and soon afterwards Harriet realized her dearest wish to be accepted as a pupil by the Welsh sculptor John Gibson. The most renowned of the English sculptors of the nineteenth century, he is supposed to have first looked at daguerrotypes of *Hesper* presented to him by one of Harriet's friends in the Caffè Greco, a coffeehouse in Rome frequented by artists. Gibson is then reputed to have said: "Send the young lady to me—whatever I can teach her, she will learn." The very next day, Harriet went to Gibson's studio on the Via Fontanella to study with this master.

She was the first of what Henry James called "that strange sisterhood of American 'lady sculptors' who at one time settled upon the seven hills [of Rome] in a white, marmorean flock." That expressive phrase, "white, marmorean flock," came to be indelibly identified with Harriet, the leader of the brood of women sculptors who came after her to live and study in Rome.

That city was regarded as the best place for both men and women sculptors to work for several reasons. Neoclassical art was considered the ideal of the time, and consequently young sculptors believed they must go there to view the colony of Greek sculpture—most of it carved in fine, white marble from the neighboring Carrara and Serravezza quar-

ries. Still in abundant supply then, this white marble was prescribed by the German Hellenist, J. J. Wickelmann, as absolutely essential, because he thought this snowy stone reflected the greatest amount of light and was most easily perceived. Mrs. Thorp added wryly: "No one during the neoclassical enthusiasm paid much attention to the fact that the statues revered as models were, most of them, Roman copies of Greek works made originally in bronze or of marble painted or gilded."

Contrary to what most Americans believed at the time, neither men nor women sculptors hacked out stone statues with chisel and mallet. Instead, professional sculptors in Italy, according to a tradition dating back to antiquity, depended on skilled workmen and carvers to translate their mental concept into a finished figure. Mrs. Thorp in her book *The Literary Sculptors* described the



Harriet Hosmer sculpted this bust of her patron, Wayman Crow, in 1866. Crow, a Washington University founder, received it at commencement on June 16, 1868.



Fifty of Hosmer's impish statues of Puck were sold after the Prince of Wales bought one for his rooms at Oxford.

process most succinctly.

What the nineteenth-century sculptor did was to conjure up an image from a myth, legend, or historical event and mold it precisely and exquisitely into clay. With imagination and consummate skill, the sculptors created clay models of Orpheus, Zeus, or even Evangeline. Thus, Mrs. Thorp dubbed them "the literary sculptors." She emphasized that the shaping of the clay was the most creative part of the process. Workmen made a plaster cast of the clay model which the marble cutters, in turn, copied meticulously and precisely. Of this process, Bertel Thorvaldsen, the much admired Danish sculptor, is often quoted as having said that "a statue is born in clay, dies in plaster, and is resurrected in marble." Quite properly, of course, many of the nude Grecian figures made by the newly arrived sculptors from the states were modestly draped in order not to offend Americans with their Puritanical conventions.

HARRIET STUDIED with Mr. Gibson for seven years and he watched over her with fatherly concern. He set her to work copying the *Cupid* of Praxiteles and the *Tasso* from the British Museum. Harriet is reported to have begun work at six a.m. and kept at it until late afternoon, when she went galloping through the streets of Rome on her lively steed. The sight of her dashing along on her pony, no larger than a Newfoundland dog, "set off riots until the arm of the law put an end to this equestrienne disturbance." Thereafter, she is reported to have confined her daily ride to the open Campagna.

Harriet's studio was in Gibson's garden, and she determined to make it a lovely place, complete, she wrote Mrs. Carr, with "birds, flowers, and every object of beauty, myself included, scattered about among the statues." Others thought Har-

Harriet Hosmer

Harriet Hosmer wore her curly hair cropped short because she thought it easier to keep free of marble dust.

riety less attractive, but, nonetheless, dear. Fanny Kemble referred to Harriet's face as that "funny, beloved little physiognomy." Hawthorne, when he saw her in 1858, described her as being "a small, brisk, wide-awake figure, not ungraceful; frank, simple, straight-forward and downright." He added that she "was wearing a man's sack of purple or plum-colored broadcloth . . . She had on a shirt-front, collar and cravat like a man's, with a brooch of Etruscan gold, and on her curly head was a picturesque little cap of black velvet, and her face was as bright and merry, and as small of feature, as a child's."

A petite woman of five-feet-two, she impressed Henry T. Tuckerman, an early art historian, "as piquant, if not prepossessing." He added that she was "a self-reliant, independent, and lively female sculptor."

Nearly all agreed, however, that she was eccentric. Probably, a better adjective would have been unconventional. Her life style was different from that of most young women of her day. And probably not many of her contemporaries shared her views. Mrs. Thorp comments: "Certainly love affairs played a small part in Harriet Hosmer's life, and this seems to have been by her own choice." Writing to Wayman Crow when she was twenty-four, Harriet observed:

Even if so inclined, an artist has no business to marry. For a man, it may be well enough, but not for a woman, on whom matrimonial duties and cares weigh more heavily, it is a moral wrong, I think, for she must either neglect her profession or her family, becoming neither a good wife and mother nor a good artist. My ambition is to become the latter, so I wage eternal feud with the consolidating knot.

Undoubtedly, many of today's feminists would not embrace her as a sister



for believing that a woman could not balance a career and marriage, but, probably, that would not have bothered Harriet. In some respects, she was very liberated, but, she did not, according to Miss LaBarre "particularly think of herself as an advocate of women's rights."

In 1861, Harriet was quoted as believing that "every woman should have the opportunity of cultivating her talents to the fullest extent, for they were not given her for nothing," but she made a point of stating emphatically, "I don't approve of Bloomerism." Nevertheless, she donned a pair of full trousers, not unlike Mrs. Bloomer's, when working on a huge statue. Harriet simply refused to be stereotyped.

Elizabeth Barrett Browning insisted that Harriet "emancipates the eccentric life of a perfectly 'emancipated female' from all shadow of blame by the purity of hers. She lives here all alone (at twenty-two); dines and breakfasts at the cafes, precisely as a young man would; works from six o'clock in the morning till night, as a great artist must, and this with an absence of pretention and simplicity of manners which accord rather

with the childish dimples in her red cheeks than with her broad forehead and high aims."

One of Harriet's most admired works was the *Clasped Hands of the Brownings* done in 1853. Of these, Nathaniel Hawthorne wrote in *The Marble Faun*, "The *Hands* symbolize the individuality and heroic union of two high, poetic lives." The following year, Harriet wrote Mr. Crow that she was working on a statue which she intended as a "love gift" for him and his family. This statue was the beautiful *Daphne*, for some years wrongly identified in the University's art collection as one of two *Oenone* sculptures. In 1969, Arline Leven, Washington University curatorial assistant, established *Daphne's* true identity through painstaking research.

Nearly all of Harriet Hosmer's most important sculpture was created during her first decade in Rome. Mr. Crow commissioned her to do her first full-sized figure in 1853. Three years later, she sent him an *Oenone* mourning her desertion by Paris. According to Miss LaBarre, her biggest chance came when a mysterious "Mr. V" (probably Alfred Vinton, former president of the board

of directors of the Mercantile Library), prodded by Mr. Crow, commissioned her beautiful *Beatrice Cenci*. This statue still lies serenely in repose in the foyer of this library in downtown St. Louis.

Sometime in the mid-1850's, when Harriet's father suffered financial losses, she produced her best-selling work—the mischievous *Puck* atop a huge toadstool. After the Prince of Wales described it as “a laugh in marble,” and bought a replica, she sold fifty more at a thousand dollars apiece. During that same period, the Crows visited her in 1864 and 1865, and from these memories and from photographs, Harriet secretly completed a portrait bust of Wayman Crow. It was presented to him on Washington University's seventh commencement on June 16, 1868. Of it, Harriet wrote to Mr. Crow: “All I can say is, that the bust ought to be a statue and that statue of gold, to repay you for all the trouble and care you have taken for me, and of me, you, my best friend.”



Oenone, commissioned in 1854 by Wayman Crow, is now part of the Washington University art collection.

Perhaps her most beautifully executed work was the stately *Zenobia* which, according to Mrs. Thorp, was put in the best location in the London exhibition of 1862. Jealous contemporaries spread the malicious gossip that Harriet didn't produce her own statues, and that this particular one was by John Gibson, her mentor. Mrs. Thorp added: “Miss Hosmer promptly brought suit for libel, withdrawing only when the editors agreed to publish a retraction not only in their own pages, but also in the *London Times* and the Roman *Galignani's Messenger*.” This statue, later exhibited in Boston, brought a crowd of 15,000 and some five thousand dollars in cash, while in the United States.

Her first public monument was a ten-foot bronze statue of Thomas Hart Benton, the famous United States Senator from Missouri. It still stands today in Lafayette Park in St. Louis, and was recently cleaned by Phoebe Weil of the University's Center for Archaeometry. Harriet's old friend, Mr. Crow, arranged this commission for her. Cast in the royal foundry at Munich, Germany, it became an object of controversy even before it was formally unveiled on May 27, 1868. Many objected to the sweeping toga in which Harriet had wrapped the scandal-clad statue, even though Benton sometimes struck the pose of a Roman senator. Judge William B. Napton said caustically, “It looks more like Wayman Crow than Benton, and no persons could be more unlike.”

The dedication ceremonies attracted a crowd of between 20,000 and 40,000. They heard a band play “Hail to the Chief,” while a cannon roared a national salute. Several decades later, Harriet was asked to create another public monument, this time of Queen Isabella. Unveiled in San Francisco in 1894, it has disappeared, perhaps destroyed by the

earthquake which shook the city in 1906.

Harriet's zest for sculpture seemed to wane after the Civil War, although she continued to produce some memorable work, including *Sleeping Faun*, exhibited in Dublin in 1865 and at the Paris International Exposition two years later. She tried unsuccessfully to win commissions to do a likeness of Lincoln, but she ceased to sculpt long before her death in Watertown in 1908.

During her latter years, she concentrated on her mechanical abilities. Said Mrs. Thorp, “Harriet liked to work with her hands; she liked to invent things, contrive things, ‘fix’ things; she was constantly constructing ingenious little household devices and setting up small machines . . . She patented an unsuccessful process for transforming limestone into marble” and during her last years “spent much time and money on a machine to solve, by means of magnets, the problems of perpetual motion.”

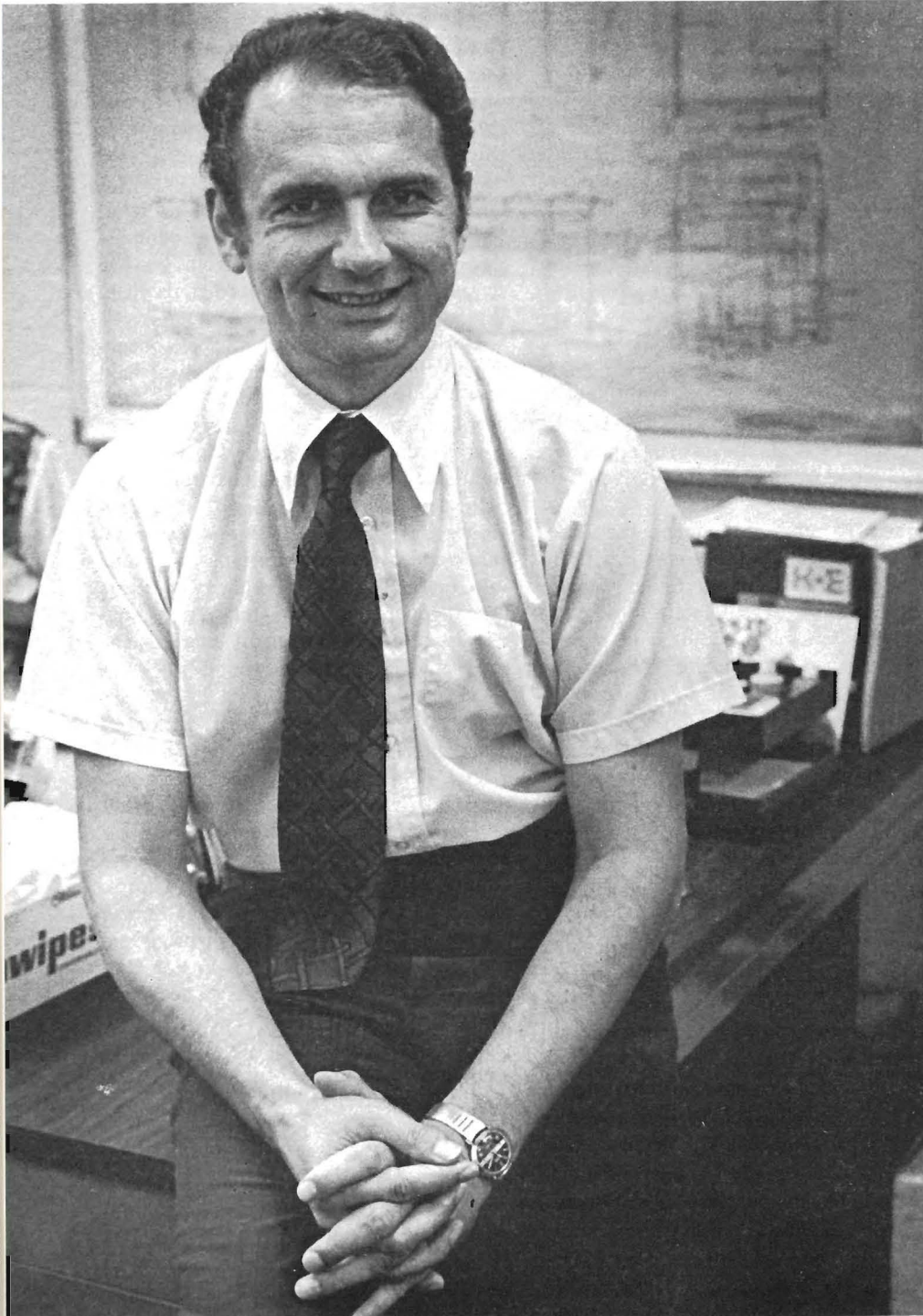
IN ST. LOUIS at least, she is better remembered for having a now defunct school, Hosmer Hall, named after her than for her sculptural triumphs. But, nationally, there is evidence that her artistic contributions are once more coming to be appreciated. Mrs. Thorp's tribute to her in the spring, 1965, *Smith Alumnae Quarterly*, later incorporated into her excellent book; the Vassar College Art Gallery exhibition, “The White Marmorean Flock” in 1972; and her recent representation in the prestigious show at the Whitney Museum testify to renewed interest in Harriet Hosmer, whom Wayne Craven recently characterized as “a perky, spritely addition to the expatriate scene.” She was an American pioneer woman of a different type; instead of helping to expand the frontiers of this country, she chose to explore what was then also virgin territory for women—the world of sculpture.



Mathematical Models

By Barna A. Szabo

A. P. Greensfelder Professor
Of Civil Engineering



MODERN SOCIETY demands enormous amounts of energy and the movement of large quantities of dangerous chemical substances between industrial centers. Energy cannot be supplied and dangerous materials moved without some risk to the environment. The task of minimizing the risks at acceptable costs poses a challenging problem to today's structural engineers.

Fortunately, we are better equipped to deal with these problems than ever before. The computer has increased our problem-solving capability by several orders of magnitude. My research is chiefly concerned with development of methodology to increase even further our ability to deal with structural problems. Stated differently, we are concerned with the construction of efficient and accurate mathematical models for structural systems.

What is a mathematical model? It is a mathematical interpretation of natural phenomena in accordance with well-defined physical principles. As an illustration, Newton's laws of motion and universal gravitation are well-defined physical principles upon which mathematical models can be based. Newton's greatest achievement was introducing the idea of using mathematical models as bases of scientific inquiry and as means of constructing comprehensive quantitative descriptions of physical systems. Grandly, one of the physical systems he chose to study and succeeded in modeling with great accuracy, generality, and elegance was the universe itself.

Some general observations about mathematical models can be made: To begin with, physical principles differ from mathematical models only in degree but not in kind. Physical principles are, in fact, mathematical models which express fundamental and general relationships among basic concepts. For example, Newton's second law of motion can and should be regarded as a mathe-

In this article, based on his inaugural address as A. P. Greensfelder Professor of Civil Engineering, Barna Szabo stresses the key role mathematical models have played in science and technology, going back to Galileo and Newton, and discusses how the University's engineers have removed the last barrier to full utilization of mathematical modeling techniques in structural engineering.

mathematical model which states that a certain mathematical relationship exists among force, mass of body to which the force is applied, and acceleration of the body. It is also implied that this relationship is independent of other things, such as the day of the week, the shape or color of the body, or even the method by which the force is applied.

In addition, all mathematical models are based on some conceptual description of the physical system model. The Copernican concept of the solar system, as confirmed by Galileo's observations, Tycho Brahe's measurements, and Kepler's computations, was available to Newton. What Newton showed was that all of those observations, measurements, and computations could be deduced from a mathematical model of the solar system based on the laws of motion and universal gravitation. Furthermore, from that model, he was able to predict the appearance of comets and explain tides and other phenomena.

Finally, all mathematical models have limitations, even those of such great generalities that they deserve to be called "laws." We know, for example, that Newton's second law of motion is unable to describe motions at the speed of light or the mechanics of bodies of the size of an electron. Newton's laws are certainly valid, however, within the range of interest of structural engineers.

Structural mechanics, as we know it today, began with Galileo, the first mathematician to consider the nature of the resistance of solids to rupture. Among his many observations was the statement that the larger bodies get, the weaker they become. At first, this may seem startling, but it makes sense if one pictures a beautifully carved marble column, forty feet long by six to nine feet in diameter lying on the ground. Perhaps a dozen craftsmen spent years in carving it, and finally the proud day arrives to raise it into place. Along comes the struc-

tural engineer, and the complicated process of jacking the column into place begins. At the first slight disturbance, the column breaks into pieces, to the great embarrassment of the structural engineer. When the excitement subsides, he reasons as follows: If this column were reduced proportionately to the size of a toothpick, there would be no problem in raising it. On the other hand, it did not take much to break the big column. It is evident, therefore, that the bigger things get, the weaker they become. Galileo correctly concluded that the reason is that weight changes in proportion to the cube of the dimension, whereas strength changes in proportion to the square.

Among his far-ranging scientific activities, Galileo conducted studies on the resistance of rigid beams, fixed at one end and loaded by their own weight. This is known as the problem of Galileo. Galileo did not have at his disposal a set of clearly defined concepts with which he could describe his insights into the behavior of deformable structures. We can say that in the seventeenth century, a conceptual barrier existed in structural engineering.

SYSTEMATIC STUDY of the mechanics of deformable bodies began with Hooke's Law, postulated in 1678. Hooke, a contemporary and acquaintance (but definitely not a friend) of Newton, gave us the famous law of proportionality of stress to strain which bears his name. The discovery of Hooke's Law was truly a great landmark in the history of structural mechanics. It opened the way for development of mathematical models of structural systems which culminated in 1821 when Navier formulated the general differential equations of elasticity.

Navier's equations rest on three physical principles: strain displacement relations, stress-strain relations, and equilibrium relations. His equations constitute a mathematical model of great generality

from which the response of elastic bodies to applied stresses can be deduced, in much the same way as the motion of comets can be deduced from Newton's model of the universe. We can say that Navier's equations broke the conceptual barrier completely.

THERE IS a price, however, to be paid for great generality. The equations are so complicated that only a very limited class of structural elements can be modeled by means of direct solution of the Navier equations. After 1821, there existed a comprehensive mathematical model for simulating the response of elastic bodies to various loads, but only meager means existed for obtaining actual solutions to specific problems. In other words, a computational barrier was encountered. For this reason, development of separate models for specific structural elements, such as bars, beams, columns, plates, and shells, continued. All of these can be viewed, however, as special models, derivable from the Navier equations by the introduction of suitable restrictive assumptions.

Even the special models are so complicated, however, that rather stringent restrictions must be applied in order to be able to obtain solutions. For example, the differential equations of plate-bending, whose development is owed to Euler, Bernoulli, Germain, and Lagrange, could be solved for a restricted class of geometry and loading only. Solutions were obtained and published for rectangular and circular plates, subjected to uniform and concentrated loads and various support conditions, but it has not been possible to obtain general solutions for stresses and displacements of an arbitrarily shaped and loaded plate. In spite of their limitations, the available solutions were of great value in giving insight, determining which are the relevant factors, and obtaining order-of-magnitude estimates.

Industrialization and the concurrent development of railroads motivated extensive investigations in structural engineering and resulted in many major achievements. It would not be possible even to highlight these developments within the available space. What I should like to emphasize is that a great deal of mathematical elegance was required to avoid having to perform large amounts of hand computations, because the engineers' ability to perform them was severely limited.

As far as structural plates are concerned, just about everything that could be learned about them was known before 1940, when Timoshenko published an important monograph in which he presented the known solutions to plates. Clearly, the computational barrier imposed severe limitations on the study of elastic bodies, but even more severe limitations on the study of inelastic ones.

Some truly heroic efforts were made in England during World War II by Sir Richard Southwell and his associates. They had attempted to overcome the computational barrier by ingenious organization of the computational process and a great deal of will power. An army of young engineers was occupied with solving for stress distributions in various structural elements of importance to the war effort.

In the 1950's, the computational barrier was broken by the computer. Suddenly, computational tasks which previously had required hundreds of man-years of effort could be given to an undergraduate as an afternoon's assignment. The appearance of the computer quickly focused attention on the branches of applied mathematics which deal with the problem of approximating partial differential equations. The objective, of course, was to develop solution strat-

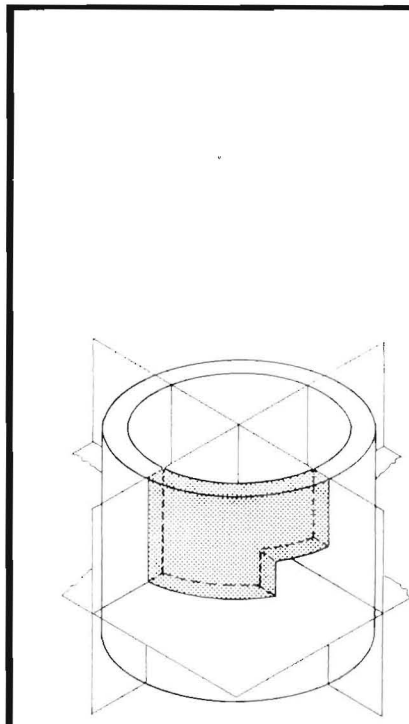


Figure 1

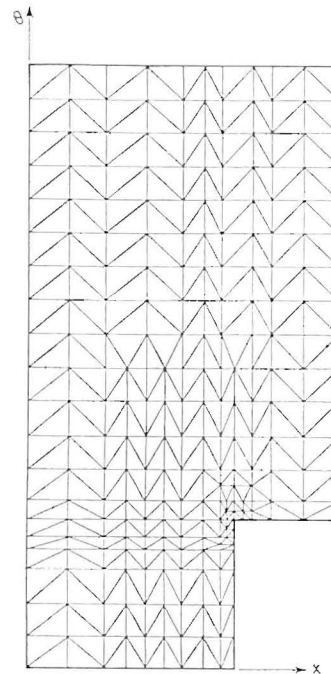


Figure 2

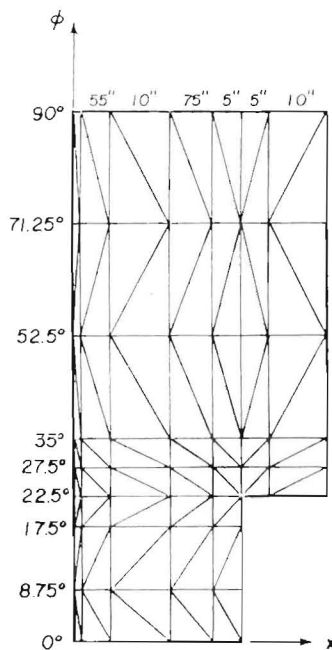


Figure 3

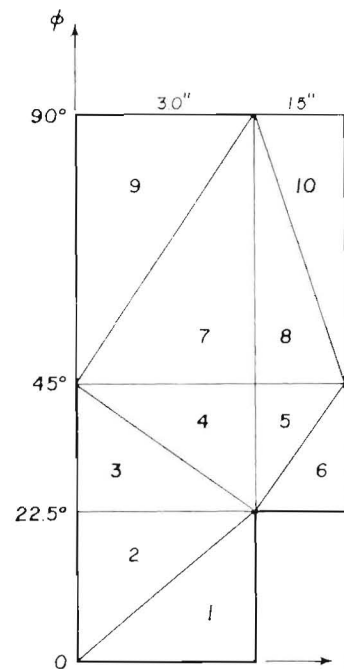


Figure 4

egies which could be programmed for the computer.

A tremendous amount of effort was invested in this undertaking when the space project began. In fact, the rate of development of mathematical modeling capabilities for structural systems was too fast. Theoretical developments could not

keep pace with the incessant pressure for immediate utilization. The result was that large, expensive, and unwieldy computer codes were produced.

When mathematicians began to analyze the new method of stress analysis known as the finite element method, they were disturbed by what they saw. The

basis for the method is that the solutions of the differential equations that model the stress distribution in structural components are approximated by simple functions defined over "finite elements," such as beam segments, triangular and rectangular plate, or shell elements, which are then mathematically "joined" to represent a specific structure. The method was developed by engineers using intuition, trial and error, and extensive experimentation. New and somewhat obscure terminologies were introduced. In many instances, the rules of variational calculus and functional analysis had been violated. Professor Gilbert Strang of the Massachusetts Institute of Technology refers to these practices as "variational crimes."

FROM THE point of view of the practicing engineer, these objections would have little importance if the finite element computer codes developed in the 1960's possessed sufficient generality and were optimal or nearly optimal in terms of accuracy and efficiency but, in fact, they are not. Lack of efficiency and certain technical limitations do not impose constraints on the utilization of these finite element computer codes in some industries but do in others. What may be an economical and technically feasible method for analyzing a space vehicle may not be economical for a railroad car or technically feasible for a nuclear containment vessel. This presents our greatest challenge. Given that the finite element method has served the engineering community in the aerospace industry very well, is it possible, utilizing relevant scientific contributions since the inception of first generation finite element computer programs, to develop a stress analysis capability more powerful, economic, and

cost-effective than the currently available codes?

Under the sponsorship of the U. S. Department of Transportation, the Association of American Railroads, and in collaboration with the nation's two largest railroad car builders, AMCAR and Pullman Standard, we have been able to assemble at Washington University a well-balanced and enthusiastic group of researchers. This group has developed the theory for a truly second generation modeling capability with many novel features. We have thoroughly researched and tested the ideas upon which this capability will rest and have prepared specifications for its implementation. To prove our points, we have conducted benchmark studies, the generally accepted method for comparing various computer programs. We chose a challenging problem, posed by the Lockheed Missiles and Space Company, concerning the determination of stresses in a cylinder containing a rectangular opening, as shown in figure 1. Because that opening has sharp corners, a complicated stress pattern is generated in the cylinder when it is compressed in the axial direction. At the corners, a perfectly elastic material would be subject to infinitely large stresses.

One of the objectives of research in numerical stress analysis is to obtain approximate solutions to specific problems as expeditiously as possible. Applying our method to the benchmark problem posed by the Lockheed Company, we succeeded in showing that it was much more efficient than any of the previously existing methods. There are two measures of efficiency. The first is the number of finite elements needed to achieve a given level of accuracy. The engineers' time involved in analyzing a given problem is roughly proportional to the number of

finite elements employed. Thus, this is a measure for the costs associated with the man-computer interface operations. The number of finite elements used by others ranged from 476 to 100, as shown in figures 2 and 3; our method required only ten finite elements (figure 4).

THE OTHER measure of efficiency is the number of simultaneous equations that the computer must solve. The required computer time is roughly proportional to the square of this number. The simultaneous equations solved by others ranged from 2457 to 637; we had to solve "only" 500 equations.

The order-of-magnitude reduction in the number of finite elements results in a very significant reduction in the required data preparation effort. It is virtually certain that future improvements will permit further substantial reductions in the number of variables and the required manpower effort. The power of the new structural modeling capability is expected to be greater, by at least an order of magnitude, than the power of current structural modeling capabilities. The impact of the new capability is expected to be very substantial. Through greatly reduced man-computer interface operations, increased efficiency, and generality, stress analysis will become less time-consuming. Consequently, structural optimization by means of successive analyses will become feasible. The expected impact is that designers will be in a better position to evaluate new ideas before prototype fabrication and testing, therefore reducing the costs and the time involved in product development.

We can claim to have made important advances in our effort to remove the last barrier—the economic barrier—to full utilization of mathematical modeling techniques in structural engineering.

A Gallery Of Trustee Profiles



John P. MacCarthy

THE YEAR after graduation from Harvard Law School, John Peters MacCarthy bought his first original oil painting. It was by Fred Conway.

Sixteen years later, his office at St. Louis Union Trust, of which he is president, clearly reflects the art-collecting taste of its occupant. It is dominated by a painting by WU faculty artist William Quinn, hung across from MacCarthy's desk so that he can best appreciate it. A second focus of the room is a sculptured side table by master metalsmith Heikki Seppa.

With the Conway scene as its foundation, MacCarthy's art acquisitions today include work by many WU faculty members, among them Arthur Osver, Edward Boccia, Bill Kohn, Richard Duhme, and Peter Marcus. For a number of years, he has attended all of the University's faculty art shows and he regularly visits shows of local artists at other St. Louis galleries.

"My interest in art is a good example of how education can influence your life. I took a course in modern art at Princeton simply because it was offered at a certain time on a certain day. And that course really focused my interests."

Almost all of his purchases are contemporary, he says, for the simple reason that contemporary works are affordable, as compared to recognized works of long-recognized artists. Although his collection is not confined to St. Louis artists, their works make up an important part of it.

That factor is an evidence of a deep and abiding loyalty that MacCarthy has toward St. Louis. His service as a member of the board of Washington University is another manifestation. "This is the community in which we live and work," he says. "This is the community which nurtures us and makes our con-

tinuance and our progress possible. It is worthy of our support first."

His life has centered around St. Louis. Native born, he grew up in the 7300 block of Westmoreland Avenue, attended Community School and Country Day and, with nine other members of his senior class of 36, went off to Princeton University. That was the year of the outbreak of the Korean War, and, as a freshman, he joined naval ROTC, so that upon graduation in 1954, he was commissioned in the U.S. Navy.

Toward the end of two years of naval service, MacCarthy applied to Harvard Law School and, though he was accepted, he almost missed accepting. "I was cruising around the Pacific on a landing ship when the acceptance letter from Harvard finally caught up with me. It announced that I must respond by a date several days previous to the letter's arrival, and I still had to wait until we made port somewhere to respond. But they took me."

He and Talbot Leland, a St. Louis girl and Vassar graduate, were married in his senior year in law school and returned to St. Louis following his graduation with honors in 1959. Shortly after, MacCarthy joined the firm of Bryan, Cave, McPheeters, and, McRoberts and, in 1969, became a partner.

"I had just been made a partner, when David Calhoun and Eugene F. Williams, Jr., of St. Louis Union Trust, called to ask me to lunch. I thought they were going to ask me either to give money somewhere or to raise money. Instead they offered me a job. They pointed out that by becoming a partner, I had achieved a certain professional goal and having done that, I should try changing areas. I accepted that and I have never regretted it.

"Although trust work has not the immediate results which characterize some of the work in law and which make it gratifying, there comes here a slower

recognition that much is being accomplished."

MacCarthy joined St. Louis Union Trust Company as secretary and is now its president. In addition, he is secretary of its parent company, First Union Bancorporation. He serves as treasurer of the board of Country Day School, as a trustee of the Missouri Historical Society, and, until recently, he was a trustee of the City Art Museum, in which he remains active. MacCarthy's strongest commitment to the University is as chairman of the Student Affairs Committee of the board. "All of us on the committee are very impressed by our contact with the students," he says. "They come to us well prepared, articulate, and willing to try to educate us."

AS A TRUSTEE of four years' seniority, appointed at age 39, he also speaks eloquently of his admiration for University Chancellor William Danforth.

"Although I've known Bill for many years, I had never before seen him in 'action.' He is terrific. Anyone who can handle those independent persons, most all of whom have been successful in their own right and are used to having their own way, is very impressive. Most trustees hold beliefs that are certainly more conservative than those of much of the faculty and the University community. Yet, Bill has the ability to get people to work together and, often, to support programs with which they have some disagreement. They support them because he has convinced them that his is the way it should be done. He makes us all pull together in a way that I never believed would be possible.

"There is no question that when Bill says something, he is so straightforward and so sincere, everyone stops to listen. I really cannot adequately describe his skill in making us all believe so strongly in Washington University."

Morton D. May

WHEN MORTON D. May received the annual award of the University's William Greenleaf Eliot Society this spring for outstanding service to the institution, the Society's president, W. Alfred Hayes, described the recipient as "a man who has already left an enduring and significant mark on Washington University as he has on the entire St. Louis community."

Morton D. "Buster" May was born in St. Louis, the home base of the nation-wide May Department Store Company founded by his grandfather, David May, and attended St. Louis Country Day School. He is a graduate of Dartmouth College.

While attending Dartmouth, he continued an interest in photography that had begun at age thirteen. That interest and the great proficiency he showed in the art, led to his accompanying and assisting photographer Julien Bryan on a three-month tour of Russia in 1934, when he was twenty years old. The next year, he went with Bryan on a "March of Time" assignment to Russia, Poland, Manchuria, China, and Japan. Those experiences gave the young May an ability and interest in photography that has continued all his life.

After returning to Dartmouth and receiving his bachelor's degree in 1936, Buster went to work at Famous-Barr Company, the May Company's "flagship" department store in St. Louis. He began his full-time career at the store, where he had worked part time since age sixteen as an assistant buyer of suits and coats in the bargain basement department. He had worked in a great variety of jobs at Famous-Barr by May of 1942, when he went into the Navy. There, he was assigned to a carrier-based fighter squadron. When that squadron moved to an island airbase during the

Second Battle of Guadalcanal, he went ashore with it as an operations officer and, naturally, the squadron's photography officer.

After the war, he returned to Famous-Barr and continued to gain experience in various phases of the business. In 1948, he became the first general manager of the Famous-Barr Clayton store, one of the first suburban branches of a metropolitan department store in the nation. In 1950, he became general manager of Famous-Barr Company and was elected to the May Department Store Company board. In 1951, he became president of the May Company as well as general manager of Famous-Barr. It was in 1958 that he became president and chief executive officer of the May Company. While he retired in 1972, he is still on the company's board and is chairman of the nominating committee.

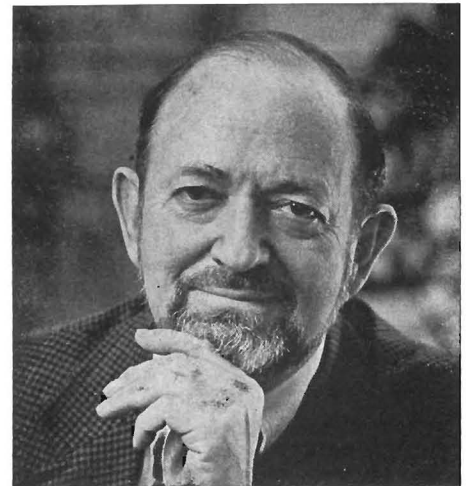
From that first photograph he made at age thirteen until today, Buster May has had a constant and abiding interest in the visual arts, as a photographer, an amateur painter, a collector, and a patron of the arts. He has assembled what is generally regarded as the world's greatest collection of German Expressionist paintings; his collections of primitive art, including South Pacific and Pre-Columbian, are outstanding. He has been an important benefactor and an active and valuable friend of both the City Art Museum and the University's Steinberg Gallery.

In 1973, Steinberg Gallery was the setting of a retrospective showing of photographs by Morton D. May, covering a span of forty-four years. Entitled "Points of View," the show included the work he did in Russia and Asia in the 1930's, his war photographs, his pioneer experiments with the Carbro method of color printing, and his more recent color studies. Since its opening at Steinberg, the show has also been presented at Dartmouth and at the Universities of Denver, North Carolina, and Texas. It will go to Hawaii next August.

Through the years, Buster May has been one of the most active civic leaders in the St. Louis area. He was one of the original board members of Civic Progress, Inc.; a founder and director of the Arts and Education Council; chairman of the board of the St. Louis Symphony Society; a commissioner of the City Art Museum, and a former president of the Jefferson National Expansion Memorial Association, which spearheaded the de-

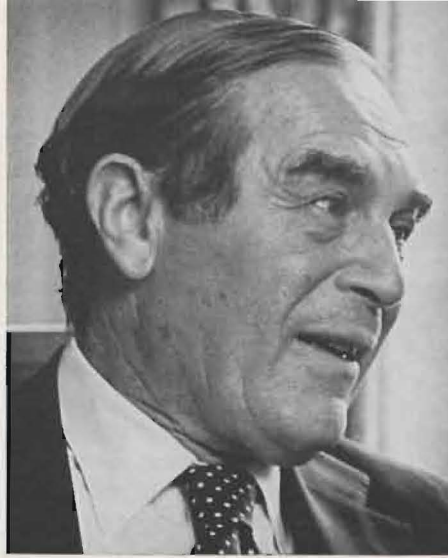
velopment of the St. Louis riverfront and the Gateway Arch; one of the original organizers of Downtown St. Louis, Inc.; a vice president of the St. Louis Area Council of Boy Scouts; a St. Louis *Globe-Democrat* Man of the Year—the list is endless.

He has served on the board of Washington University since 1958 and is now a Life Trustee. He is a member and former chairman of the Board's Honorary Degree Committee and a member of the Educational Policy Committee, and he was the first president of the Eliot Society and served for eight years in that post. He has been a friend and adviser to four Chancellors and has made countless friends among the staff, faculty, and students.



HE HAS ALSO shown great interest in other area institutions of higher learning. He headed the St. Louis campaign and was deeply involved in the national campaign to raise funds for the Pius XII Memorial Library at Saint Louis University and lent strong support to the development of Webster College, where his wife, Marge, is on the board. Mrs. May, incidentally, is as active in civic and cultural affairs as her husband.

When asked why he agreed to come on Washington University's Board of Trustees eighteen years ago, Buster May replied, "I joined for two reasons: first, it's a great university of tremendous importance to the St. Louis community and I wanted to help make it even greater, and second, I live across the street from the campus. I want it to be a good, healthy university because it's practically in my back yard."



Stanley R. Miller

AT THE HEIGHT of the student anti-war protests of the late 1960's, one of the protesting students stopped Washington University Trustee Stanley R. Miller after a board meeting on campus and asked him with great belligerence, "Just exactly what are you getting out of being a Trustee?"

Miller thought for a moment and then replied calmly, "A great opportunity to give infinitely more of my time to the University than I can really spare and a deep regret that I haven't been able to give a lot more money to the University than I have so far."

That statement really sums up the attitude of Life Trustee Stanley R. Miller, who has been on the University Board since 1965. Although both his business headquarters and his home have been on the Eastern seaboard most of his life, he has managed "to make about three out of every four board meetings" for the past eleven years and to function as a regular and truly invaluable member of the Board's Investment Committee.

Stanley Miller was born in Stillwater, Oklahoma. He graduated from Washington University in 1925 with a bachelor of science in commerce degree. After a year at the Harvard Graduate School of Business Administration, he joined Lehman Brothers in 1926. In 1930, he became associated with Lazard Freres and Company.

In 1940, he became special assistant to the chairman of the War Production Board and in 1941 entered the Navy. During his four years of service with the Navy, he was assistant Navy liaison officer and Office of Strategic Services liaison officer with the War Production Board and a member of the Price Adjustment

Boards of both the Navy and the Army.

After the war, he joined Goldman, Sachs & Company, a leading investment banking firm, where he was made a general partner in 1950. Two years ago, he retired as a general partner and is now a limited partner.

"Making the transition isn't so easy," he reveals. "For the first few months, I was about 20 per cent retired and 80 per cent still active. I'm hoping to turn those figures around eventually, but it takes time."

Miller is married to the former Catherine Mullen of Lawton, Oklahoma. They have three married daughters. With the children gone and Miller in at least partial retirement, the couple is managing to do some of the traveling they have always wanted to do, but time and responsibilities prevented. These days, they are spending winters in the Bahamas, summers traveling in Europe, and the rest of the time at their home in New Canaan, Connecticut.

Always concerned about education, Miller spent more than a decade on the board of the Westover School in Connecticut. He agreed to become a trustee of Washington University because, as he recalls, "I felt a genuine interest in what I saw emerging as a great educational institution and felt that possibly I could make a contribution."

He is enthusiastic and optimistic about the future of the University, despite the natural caution about financial matters his years in the investment business have bred.

"Matching the Danforth Foundation \$60 million grant was a terrific accomplishment," he points out, "and a great tribute to the basic quality of Washington University. The University now has a much stronger foundation and

underpinning than it ever had in the past.

"Also, Washington University is now drawing its student population from a much broader cross-section, economically, socially, ethnically, as well as geographically," he continues, "which gives added strength and vitality to an institution like ours."

WHILE HE FEELS that Washington University is in a relatively strong position because of the tremendous response to the Danforth Foundation grant and the widespread and active support of the St. Louis business community, he feels that many difficulties lie ahead and that "this is no time to let down."

"Unfortunately," he emphasizes, "in an inflationary period like this, costs tend to increase at a geometric rate while income can only go up arithmetically. The gap is widening because the University cannot compromise on quality and so far there is no sign of any real tax relief to help support private, independent higher education.

"The University is blessed with a great Chancellor, with a first-rate faculty, and with enormous contributions of time and resources from the business and civic leaders of the St. Louis area.

"Washington University has strong identification with the St. Louis community and the St. Louis community has strong identification with Washington University."

On the whole, Stanley Miller is bullish on Washington University.

Theodore D. McNeal

AS PRESIDENT of the St. Louis Board of Commissioners, Washington University Trustee Theodore D. McNeal is in his third professional career. For more than forty years, he was an official of the Brotherhood of Sleeping Car Porters, and for the last ten of those years, he was a Missouri State Senator. Somehow, during all that time, he also managed to be an extremely active and valuable community leader.

Ted McNeal was born in Arkansas, but moved to St. Louis with his family at an early age. It was in 1929, that he took what he thought was a temporary job as a Pullman porter. At the time, he was on vacation from his regular job with a St. Louis ceramics firm. When he took on the temporary porter's job, the newly organized Brotherhood of Sleeping Car Porters was in the midst of its titanic struggle not just for recognition but for survival.

McNeal was persuaded by the early union leaders to give up his ceramics job and become a full-time Pullman porter. At the time, there were just seven Brotherhood members in a force of more than 800 working out of St. Louis. Ted McNeal was very shortly elected local secretary and organizer, a position he held without pay for more than forty years.

In 1951, McNeal was elected International Vice President of the Brotherhood of Sleeping Car Porters, a position he held for twenty-one years. In that post, he was responsible for the preparation and presentation of the union's cases before the National Railroad Adjustment Board and served as chief national negotiator with the Pullman Company and with the railroads.

It was in 1961 that members of the community approached McNeal with a

proposal that he run for the Missouri Senate. At first he declined, pointing out that his duties with the Brotherhood would not allow his holding any other position. The Brotherhood leadership disagreed and enthusiastically backed Ted McNeal for the state legislature. He was the first Black elected to the Senate.

During his decade in office, he served as chairman of such important committees as Appropriations, State Budget Control, Ways and Means, Mental Health, and Employment Security. During the last two years of his service, he was chairman of the Senate Democratic Caucus. An effective fighter for civil rights and a staunch friend of labor, he also proved to be equally zealous in his work on behalf of farmers, businessmen, and other members of his constituency.

When in 1965, the *Jefferson City News and Tribune* listed McNeal as one of six outstanding members of the State Senate, the state capital newspaper said in part about Senator McNeal, "On a comparative basis, he probably accomplishes more for those he represents than any other senator. . . . Perhaps the man most respected by a press corps with a talent of skepticism."

In 1971, McNeal retired from both the union and the Senate. He came out of retirement in late 1972, when Christopher Bond called him and asked if he would accept the job as President of the St. Louis Board of Police Commissioners. (St. Louis is one of only three major cities in the nation where the police department is under state control.)

In his new career, Col. McNeal has been doing as well as he did in his first two. Under his direction, the St. Louis



Police Department has been cited by the Federal Bureau of Investigation as one of the leading urban police departments in the nation. He has done a remarkable job of recruiting police officers at a difficult time in the history of our cities, he has reduced cost and trimmed unnecessary personnel, and he has worked extremely hard to make the city's police more responsive to the citizens and the citizens more understanding of the police.

In his official positions as union leader, state senator, and chief police commissioner, Ted McNeal has accomplished a great deal, but in his many volunteer roles in civic and community activities, he may have accomplished even more. There haven't been many important community issues over the past forty years in which McNeal has not played a role—and often a leading one. He has, of course, been a pioneer and leader in the civil rights struggle in St. Louis and in the state. His energy and talents have been applied equally effectively to many other community problems and projects. He has served as Commissioner of the St. Louis Housing Authority, vice president of the Herbert Hoover Boys Club, a director of the Jefferson National Expansion Memorial Association, and a member of the board of the St. Louis Symphony Society.

A MAJOR CONCERN of Ted McNeal throughout his career has been education. Before joining Washington University's Board of Trustees in 1973, he had served on the President's Council of Saint Louis University and on the Board of Curators of the University of Missouri. He served for six years as vice chairman of the Higher Education Coordinating Council of the St. Louis Metropolitan Area and was a member of the Policy Committee of National Assessment of Educational Progress.

At Washington University, he has become a member of both the Board's Executive Committee and its Student Affairs Committee. Speaking at a recent state conference on higher education, Col. McNeal urged that public university officials should join ranks with their counterparts in private institutions in the search for more financing to make higher education possible for more people.

"Our common goal," he said, "should be to make accessibility to higher education easier for qualified students seeking to matriculate at all our quality institutions—public and private."



"Just gimme a coupla aspirin. I already got a Purple Heart."

Bill Mauldin

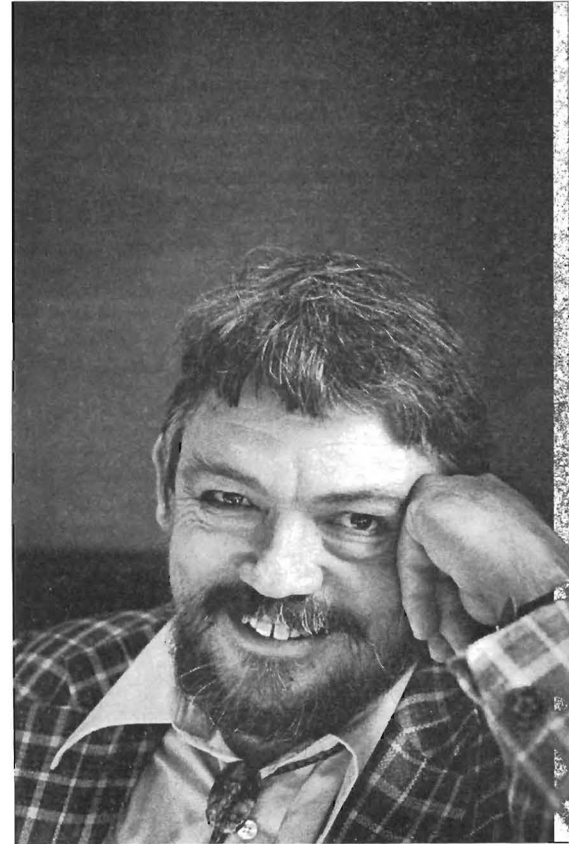
Up Front

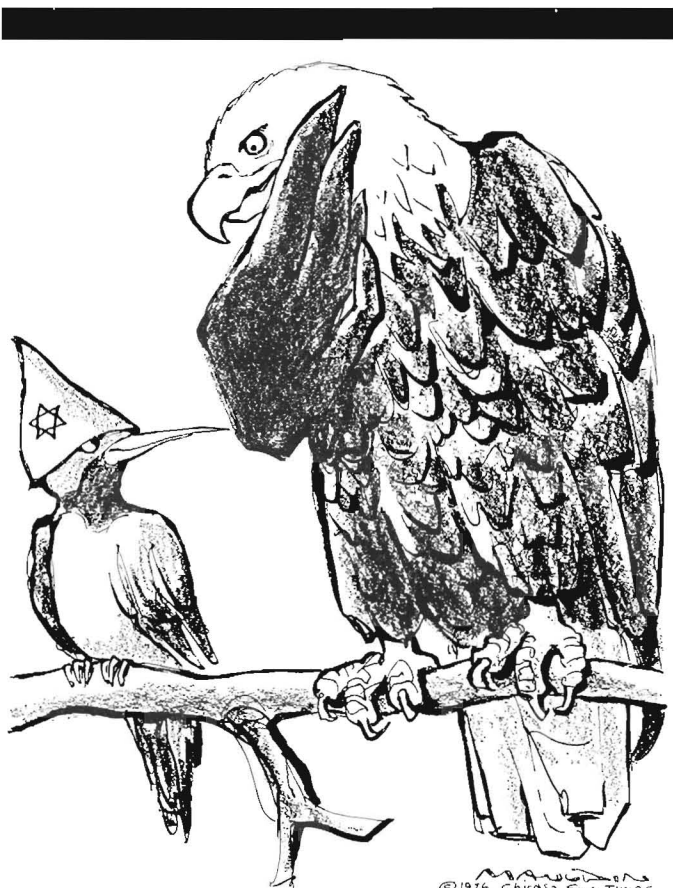
Bill Mauldin up front and in person is as witty and perceptive as his cartoons. Actually, Mauldin does not think of himself primarily as a cartoonist, but as a journalist whose main, but by no means only form of expression is the cartoon. He came to the Washington University campus this fall as part of the Wednesday Assembly Series in Graham Chapel. There, he gave an entertaining, sometimes rambling but always graceful, performance on the podium, illustrating his points with instant Mauldin cartoons drawn on the spot. He also met with groups of students informally to answer questions, exchange ideas, and apparently enjoy himself immensely.

The boyish Army cartoonist, who was the youngest winner of the Pulitzer Prize in history for his "Willie and Joe" cartoons during World War II, is a bearded man in his fifties today, but the irreverent iconoclast who made front-line combat soldiers laugh and rear-echelon brass squirm is still there. In 1959, he won a second Pulitzer Prize when he was the editorial cartoonist for the *St. Louis Post-Dispatch*. Bill spent four years with the *Post-Dispatch* and then joined the *Chicago Sun-Times*. His cartoons are published today in more than 200 newspapers throughout the country.

Mauldin was born and grew up in southern New Mexico, where he has been living again for the past six years, sending his five cartoons a week into the *Sun-Times* by mail or telecopier. He studied art through a correspondence school and then studied for one year at the Chicago Academy of Fine Arts, helping to meet expenses by dishwashing and sign painting. When World War II came along, he went into the infantry and was soon submitting cartoons to the Army newspaper *Stars and Stripes*. Accompanying combat troops through the Allied campaigns in Sicily, Italy, France, and Germany, he soon became accepted as the foot soldier's unofficial spokesman. His best known book, *Up Front*, is a collection of his wartime cartoons and the stories behind them. He has published another dozen books, numerous magazine articles, appeared in two films, and run unsuccessfully for Congress. In both the Korean and the Vietnam wars, he returned to the front, and was an observer of the Six-Day War. All of this time, his perceptive and often pungent editorial comment on the passing scene has been appearing an average of five times a week in daily newspapers.

The Washington University campus was just one of many Bill Mauldin has visited recently. For the past two years, he has conducted a series of seminars on political cartooning (for non-art students) at Yale University. In discussing the art of the cartoon, Bill Mauldin remarks, "Style is bunk; some of these young artists take two hours to sign their name. It's the idea that counts."





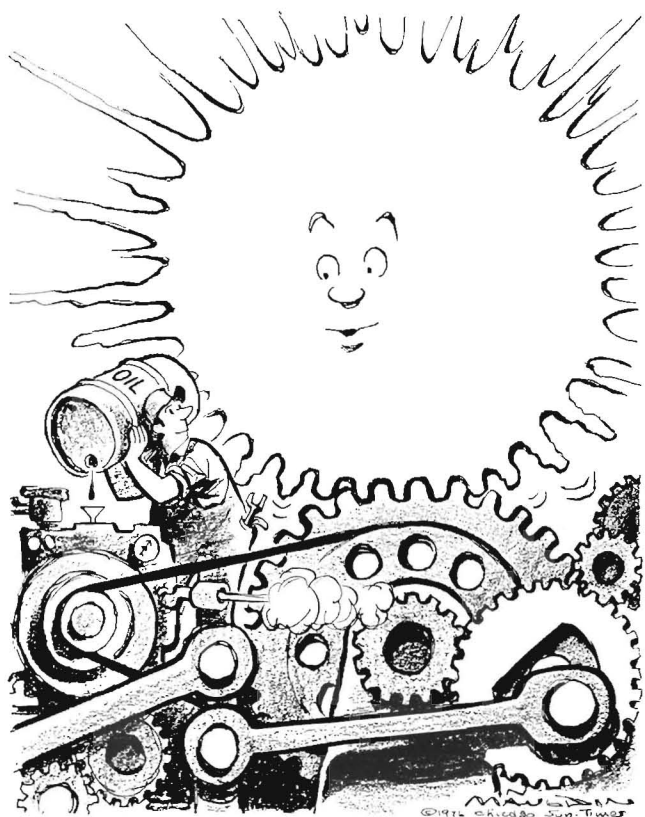
"Good show."

MAULANA
©1976 CHICAGO SUN-TIMES



"It's merely my faithful bearer, Ngumbo, giving me shade."

MAULANA
©1976 CHICAGO SUN-TIMES



"Now?"



"I can't understand what keeps it alive."

Comment

ON CARL DAUTEN AND CARL CORI

OVER THE PAST few decades, hundreds of individuals have had great influence and have played important roles in the University's emergence as a truly national institution and in helping it to achieve its primary goals of providing inspiring teaching, innovative research, and valuable community service.

Among all of these individuals, a surprising number were named Carl. There was Dr. Carl Moore, who served as head of the Department of Medicine and later as first Vice Chancellor for Medical Affairs and first president of the Washington University Medical Center; Dr. Carl Moyer, the distinguished head of the Department of Surgery for many years; Carl Tolman, outstanding teacher, researcher, Dean of the Graduate School of Arts and Sciences, and Chancellor in 1961; Dr. Carl F. Cori, who, with his late wife, Gerty, received the Nobel Prize in medicine in 1947; and Professor Carl A. Dauten, Executive Vice Chancellor, who died this fall.

CARL A. DAUTEN, AB 36; MA 39; PhD 44, was a member of the faculty of the School of Business and Public Administration for thirty years; he was a key member of the central administration for fourteen of those years, and for the last seven, he was, as Executive Vice Chancellor, the second highest ranking officer of the University.

In that position, Professor Dauten shared with the Chancellor the basic responsibilities for academic, budgeting, and administrative affairs. During his entire administrative career, Professor Dauten continued to teach and to keep up with the latest developments in his special fields of consumer credit and business forecasting. He was the author of many important books in his field, several of which are currently in use as college textbooks.

At memorial services for Professor Dauten, Chancellor William H. Danforth said, in part:

"A chancellor can come and go; crises rise and recede. Rhetoric can flow. For

fourteen years, Carl Dauten has held the institution together, planning and adapting—worrying about faculty appointments and the drainage of rainwater from the campus—solving the problems that others could not handle.

"He could deal comfortably with all the people in our community, from the most easy-going to the most prickly. I think part of the reason was that he liked his colleagues—not for our strengths and weaknesses, not for our virtues or our faults, but for ourselves."

In speaking of Carl Dauten's contributions as an administrator and his qualities as a human being, former Chancellor Thomas H. Eliot said:

"For fourteen years, this self-effacing man, possessing the most detailed knowledge of the University, together with a large store of practical wisdom and common sense, gave himself in invaluable service to the University for both Chancellors under whom he served.

"Outwardly, he had remarkable equanimity and seldom, if ever, seemed flustered. Above all, he was both kindly and trustworthy, a man of conscience and integrity, who set a splendid example for all University administrators."

The University is the poorer now that Carl Dauten is gone, but it is infinitely richer because he was here.



Carl A. Dauten (1914-1976), Washington University alumnus, teacher, scholar, and key administrator.

DR. CARL F. CORI, Distinguished Service Professor Emeritus of Biological Chemistry and Nobel Laureate, was honored this fall with a symposium on his research specialties, in which many of his most distinguished former students and colleagues participated. Held on the occasion of Dr. Cori's eightieth birthday, the symposium centered around the delivery of important scientific papers, all by former students or colleagues.

The Nobel Prize-winners among their number were Dr. Arthur Kornberg of Stanford University; Dr. Severo Ochoa of the Roche Institute of Molecular Biology; and Dr. Luis Leloir of the Institute of Biochemical Investigation in Buenos Aires, Argentina.

The other outstanding research scientists who participated in the symposium were: Dr. Alberto Sols, Institute of Enzymology, Madrid, Spain; Dr. Edwin G. Krebs, University of California; Dr. David M. Kipnis, head of Washington University's Department of Medicine; Robert K. Crane, Rutgers Medical School; Dr. C. R. Park, Vanderbilt School of Medicine; Dr. Joseph Larner, University of Virginia; Dr. Ernst Helmreich, Würzburg University, Germany; Dr. N. B. Madsen, University of Alberta, Canada; and Dr. Mildred Cohn, University of Pennsylvania.

The man this world-renowned group of scientists gathered to honor was born in Prague, Czechoslovakia, and was graduated from the medical school of the German University of Prague. While in medical school, Carl Cori began a scientific collaboration with a fellow medical student, Gerty Theresa Radnitz. They were married in 1920, and their scientific collaboration continued until Mrs. Cori's death in 1957.

After working together in Europe and at the State Institute for the Study of Malignant Diseases, Buffalo, New York, the Coris came to the University in 1931, where Carl was named Professor of Pharmacology. Gerty, who began her career at the University as a research associate, was appointed Professor of Pharmacology in 1947. They shared the 1947 Nobel Prize in medicine.

The Symposium was a fitting tribute to a great scientist and to the memory of his lifelong collaborator. Their influence has spread throughout the world and will continue to spread so long as the search for knowledge continues.

—FO'B

Cori Symposium



Carl and Gerty Cori in 1947, the year they won the Nobel Prize in medicine and physiology.



Dr. Carl F. Cori, professor emeritus of biological chemistry, was united with three of his former students and colleagues, all Nobel Prize-winners, at a symposium held in honor of Nobel Laureate Cori this fall. From left: Dr. Arthur Kornberg, Dr. Severo Ochoa, Dr. Cori, Dr. Luis F. Leloir.

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