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Vol. 10 No. 16/Dec. 12, 1985



Bears' midfielder Dave Ritter attempts a shot on goal against the University of North Carolina-Greensboro defense during the national championship game Sunday. The Spartans' defense was perfect as it shut out the Bears for only the third time this season.

Championship lost, but soccer Bears still #2 in nation

Two weeks ago, the WU soccer team knew their season would end on Sunday, Dec. 8, in the NCAA Division III soccer final, but they had no idea it would be a 5-0 loss to the University of North Carolina-Greensboro. Prior to the game, both WU coach Joe Carenza Jr. and UNC-G coach Michael Parker thought the game would be decided by one or two goals.

"Going into the game, we didn't feel that Greensboro was five goals better than us, but on Sunday they were," said Carenza. "We collapsed defensively and they took advantage every time. They really came to play; it was evident by their first two goals."

The Spartans scored quickly and often in the first half with junior forward Andrew Mehalko serving as the UNC-G catalyst. He tallied UNC-G's first three goals before sophomore forward Willie Lopez added another with 1:02 remaining in the first half, giving the Spartans a comfortable 4-0 halftime lead in front of more than 2,688 spectators at Francis Field.

The Bears played better in the second half, but it was too late as the stingy UNC-G defense shut out WU for only the third time this season. The 5-0 loss was the worst defeat for a WU team in 10 years, losing to the University of Missouri-St. Louis 6-0 in 1975.

Were the Bears that bad on Sunday or were the Spartans that good?

"Not in my wildest dreams did I imagine that we would win by such a large margin," said Parker. "Our first 45 minutes of soccer was probably the best half of soccer I've ever seen one of my teams play," said Parker, who is now one of only four collegiate coaches to win four national soccer championships. "I don't think it was a case of Washington playing badly at all, I just think it was a superb half of soccer by us."

"They couldn't do a thing wrong," said Carenza. "Despite the loss, it's been a great season and everyone associated with our program deserves a pat on the back."

"Our fans were terrific on Sunday. It was great that we could play in front of our home crowd even though the outcome was disappointing. The Washington University fans showed their enthusiasm and support until the very end."

Five WU seniors — John Konsek, Tom Ogorzalek, Shawn Kinnare, Peter Graham and John Brill — walked off the soccer field for the last time on Sunday, finishing four years of intercollegiate soccer.

"All the seniors had outstanding seasons this year and we'll have our work cut out for us in the off-season as we prepare and recruit players to fill their positions," Carenza said.

WU finished the 1985 season 21-3 — the best record in 25 years of soccer. The Bears were runner-ups in 1978, losing to Lock Haven University, Pa., 3-0.

Scientist announces research that will lead to genetically engineered virus-resistant plants

Roger N. Beachy, Ph.D., research scientist and professor of biology at WU, recently announced the results of research he believes will lead to the first genetically engineered virus-resistant agricultural crops.

Beachy presented results of his experiments on virus-resistant plants at the joint annual meetings of the American Society of Agronomy, the Crop Science Society of America, and the Soil Science Society of America, held Dec. 5 in Chicago. The breakthrough was announced during a symposium on "Development and Applications of Molecular Technologies for Crop Improvement."

The experiments were conducted by WU researchers Patricia Abel and Richard Nelson, Ph.D., in collaboration with Robert T. Fraley, Ph.D., and Stephen G. Rogers, Ph.D., of Monsanto Co., which also funded the research.

"Our experiments have produced genetically transformed plants that manifest delayed symptoms of infection from tobacco mosaic virus compared to control plants," says Beachy. Tobacco mosaic virus (TMV) is a common virus that attacks many food-producing plants including tomatoes and peppers.

"We believe the breakthrough has been achieved. Now it is a matter of understanding the mechanisms that cause the resistance, and perfecting the techniques to produce plants that are field-resistant to virus infection."

"We expect this advancement will be the basis for wide-scale commercial production of virus-resistant plant seed," says Beachy.

Beachy believes transformed plants will be ready for field testing within three to four months. A field-ready strain of disease-resistant plants could be ready in one to three years, he says, depending on the spe-

cific plant and the virus.

For years, scientists have searched for a genetic engineering technique that would produce virus-resistant crops. Plant viruses are one of the main factors in reduced crop yields. According to the Chemical Rubber Company Handbook of Pest Management, for example, TMV accounted for an estimated \$50 million in damage (five percent) to the U.S. tomato crop in 1982. That same year, wheat streak mosaic virus caused an estimated \$95 million in losses to U.S. wheat producers.

Until Beachy's genetic engineering success, crop scientists had two primary methods at their disposal to help increase resistance to viral infection. Using conventional plant breeding techniques, crop plants can be crossbred with different strains of the same plant that exhibit natural genetic resistance to a particular virus. But crossbreeding often results

in unwanted traits that must be back-bred out of the cultivar — a hit-and-miss process that takes years to accomplish. For some viruses, resistant strains are not available.

In a second technique known as cross-protection, a limited number of plant varieties including tomatoes and citrus and apple trees are inoculated with a mild strain of virus during transplantation as seedlings. Infection by the mild virus helps delay the appearance of a second, more severe infection. The process is only applicable to crops that are transplanted.

But Beachy's research group has genetically altered plants so resistance to a virus is part of their DNA makeup, and will be passed to successive generations of plants.

In the experiments, researchers used TMV. Like many other viruses,

Continued on p. 4



Inspecting tobacco plants used in virus-resistant genetic engineering experiments are (from left): Richard Nelson, senior research associate; Roger N. Beachy, research scientist and professor of biology; and Patricia Abel, research assistant. The transformed plant in the middle is resistant to TMV infection and exhibits vigorous growth, while the ones on either side are stunted and have misshapen leaves.

Videodisc stresses quake-awareness to future architects

With a touch to the video screen, the ground rumbles, buildings collapse and the voice of a frightened Alaskan broadcaster hoots nervously. It's the sights and sounds of an earthquake in progress, captured on interactive videodisc by W. Davis van Bakergem, director of WU's Urban Research and Design Center.

The videodisc, developed with a National Science Foundation grant, points out the need to consider earthquake resistance from the earliest stages of building design. In addition to film footage and still photographs of earthquake damage, the disc shows architects how to make buildings more resistant to quake damage.

Produced by van Bakergem, the program was written with the help of Peter Seely, a WU graduate student in engineering. It has been shown to future building professionals in both the architecture and engineering schools at WU.

"Most architects think seismic resistance is something the engineer will take care of," says van Bakergem, affiliate assistant professor of architecture. "Few consciously consider that early design decisions bear on the damage a building will sustain in an earthquake."

Although a good engineer can make almost any building strong, earthquake-aware architects can make seismically resistant buildings cost less. "We can save the expense of engineers fixing designs that aren't seismically sound," van Bakergem says.

The first section of the videodisc covers causes and effects of earthquakes. The second section, on "building configurations," explains the consequences of basic design decisions involving building size, shape and structure.

For example, a higher first-floor ceiling to accommodate a lobby makes a multi-story building more vulnerable to earthquake damage. And a stairwell or elevator shaft located off-center creates "asymmetrical stiffness." This stiffness makes a building likely to twist around the stiff core and collapse.

Earthquakes generate lateral force that clashes with the vertical, gravity-bearing strength of buildings, especially at their joints and connections. Buildings usually fall down, not over, as the quake bends and shears columns, beams and walls.

The videodisc points out that trembling ground isn't what makes earthquakes deadly. It's collapsing buildings and falling objects that cause deaths and property damage. The disc includes a chapter on non-structural systems that teaches how to keep furniture, windows and other objects from contributing to quake damage.

The program teaches with a series of interactive "quiz" frames. A

touch-screen allows viewers to test their own earthquake knowledge and correct common misconceptions.

For example, a screen showing a U.S. map asks the viewer to touch the area that has suffered the most severe earthquake. If the viewer touches the West Coast, the next screen chides, "Too bad! You picked the wrong answer." If he touches the central United States, along the Arkansas-Tennessee border, the next screen says, "You are correct!" and explains that an 1811 earthquake along the New Madrid fault in the central Mississippi Valley probably measured 8.6 on the Richter scale.

That event rattled china cabinets as far away as Washington, D.C., but

caused very little injury or death because the area was only a sparsely populated wilderness. Now, many experts predict a major earthquake along this Midwestern fault by the year 2000. They say it could devastate several major population centers, including Louisville, Ky.; St. Louis; and Memphis, Tenn.

Another quiz on the videodisc shows that all 50 states have had some seismic ground-shaking. So seismic resistance concerns all the nation's architects, not just those working in regions of high risk.

Van Bakergem thinks the videodisc is just the medium to make architecture students more aware of the importance of seismically considerate design. Computer-animated graphics add motion to the tried-and-true diagrams of traditional architectural education, allowing students to more realistically witness the effects of quakes on buildings.

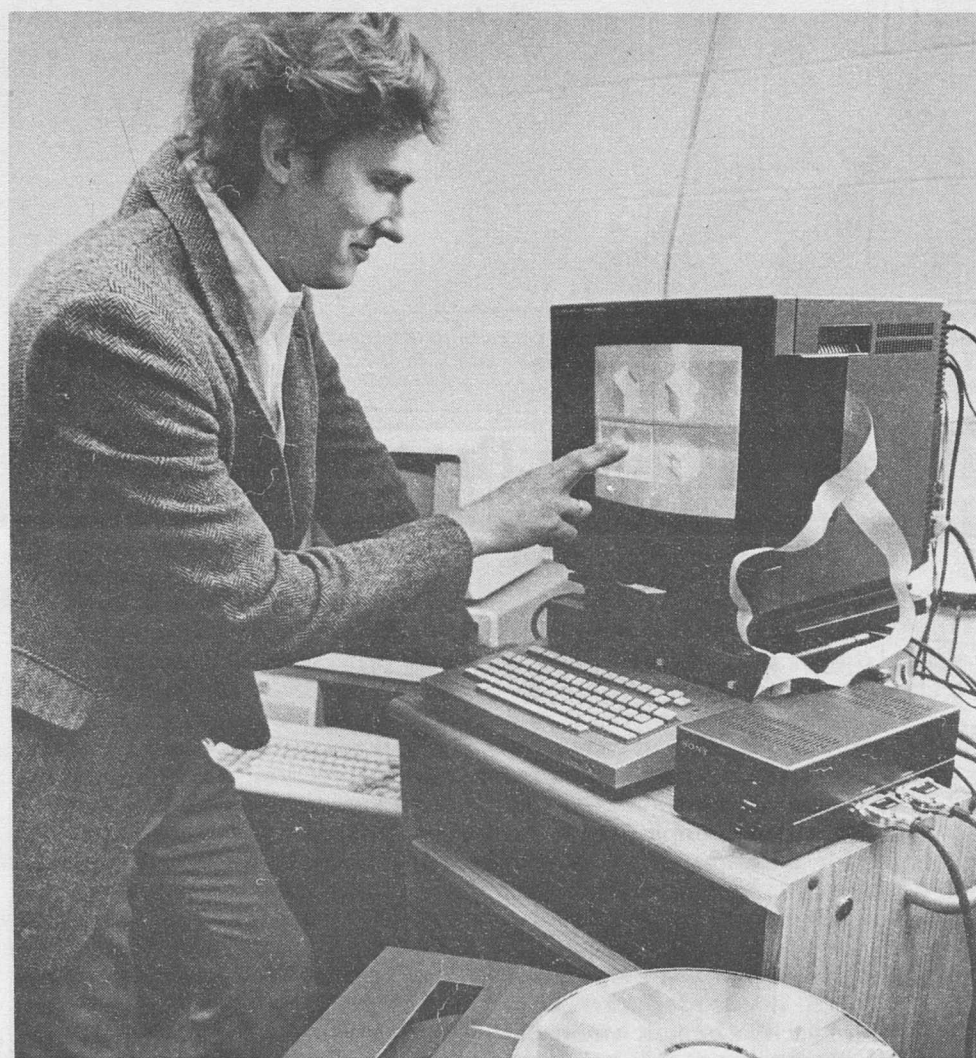
Early studies show that well-designed interactive video systems can be much more effective than conventional teaching methods. In one study, participants raised pre-test scores from an average 45 percent to an average 90 percent with the medium.

Videodisc teaching does have its problems. For one, it requires expensive, sophisticated equipment. Van Bakergem hopes to make the display more portable and also to make discs on other topics. Meanwhile, he hauls his gear to architectural meetings and conferences everywhere from San Francisco; to Vancouver, B.C.; to Charleston, S.C.

On Nov. 19 in Washington, D.C., he presented the disc to a joint quarterly meeting of the National Science Foundation, Federal Emergency Management Administration, United States Geological Survey and National Bureau of Standards.

"The disc combines information on an important topic with the latest in technology," says van Bakergem. "It will make a good complement to architectural education on all levels."

Laurie Navar



W. Davis van Bakergem demonstrates the interactive features of his videodisc program.

New minor explores classic texts from many disciplines

The great thinkers — Homer, Sophocles, Plato, Machiavelli, Darwin, Thoreau. The great thoughts — discovery of the soul, evolution vs. revolution, the nature of self. The concepts which have helped shape Western intellect are explored in a new minor for freshmen and sophomores in the College of Arts and Sciences called Text and Tradition, which made its debut this fall.

The National Endowment for the Humanities has granted WU \$228,000 over two and a half years to implement the minor, according to project director Linda B. Salamon, Ph.D., dean of the College of Arts and Sciences.

"Because Washington University's leadership in undergraduate education is recognized nationally, the endowment has judged this project as excellent," she said.

Text and Tradition sprang from two sources, the dean said. Professors such as Naomi Lebowitz, Ph.D., in the English department, Robert McDowell, Ph.D., in mathematics,

and Laurence Meyer, Ph.D., in economics approached Salamon about establishing a "great books" program that would draw upon the classic texts of liberal education in many disciplines.

"Once the idea was brought forth, many other professors wished to join in the enterprise, and, in fact, they have," Salamon said. "From different directions on our faculty, people remembered with affection an undergraduate sequence like they had at Chicago, Wellesley, Yale, Columbia and Holy Cross."

Simultaneously, Salamon and her associates in the dean's office noticed an increasingly early, strong commitment by students to a specialized field of study and a decreasing frequency of changes in majors during the undergraduate years.

"The traditional 'layer cake' view of undergraduate education — spending the first two years in introductory survey courses and the last two years in advanced studies of selected disciplines — no longer is true

at Washington University," she said.

Text and Tradition comprises seven courses, spread over the four semesters of the first two years. Classical Literature and Early Western History were offered this fall. Puzzles and Resolutions and The Emergence of the Modern Mind will be offered next semester.

"Especially when combined with pre-medicine, science, mathematics or economics, the minor offers a well-balanced, comprehensive program of study," Salamon said.

Students and faculty are about to complete their first semester of Text and Tradition and are ready for the spring 1986 semester, but Salamon said she is eager to find faculty members in the humanities and social sciences who are interested in teaching in the sequence for the 1986-87 year. And, of course, she wants to attract students to enroll in the courses.

For more information, call 889-6840.

RECORD

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NOTABLES

Milica Banjanin, Ph.D., associate professor of Russian, gave a paper at the Central Slavic Conference on "From Fact to Fiction: The Role of the Red Domino in Andrey Bely's *Petersburg*."

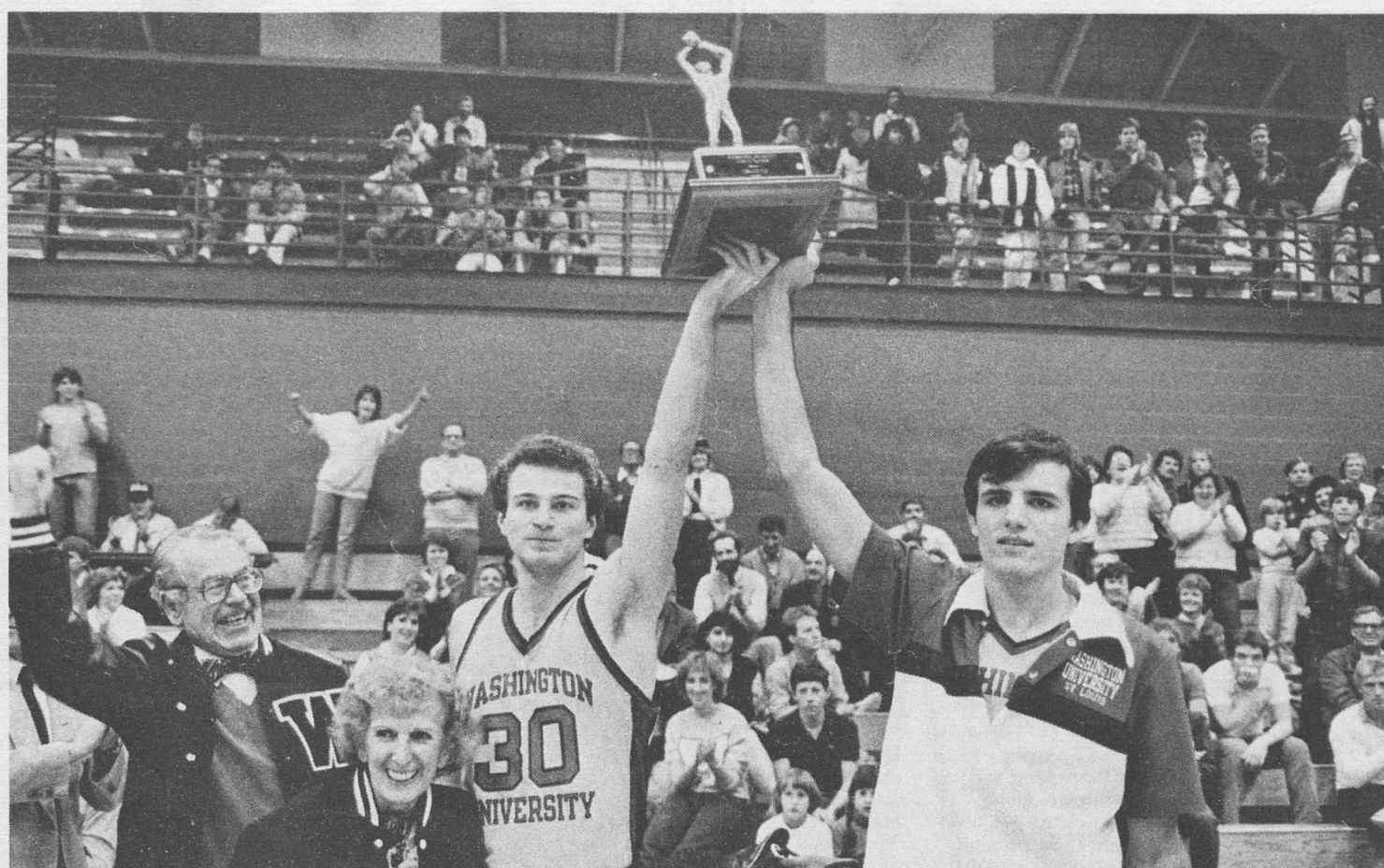
Harold Blumenfeld, professor of music, has been awarded the American Society of Composers, Authors and Publishers 1985-86 ASCAP award. The awards, given to assist writers of serious music, are selected by an independent panel. His Russian song cycle, "Silentium," based upon nine poems of Osip Mandelstam, received its first performance in English on Nov. 25 by the Washington Composers Forum in Seattle. The English version of the cycle was penned by Walter Arndt of Dartmouth College. An earlier work of Blumenfeld's, "Expansions for Woodwind Quintet," recently was performed in Jefferson City and Columbia, Mo., by the Missouri Arts Quintet as part of the opening concerts of the series offered respectively by Lincoln University and the University of Missouri.

Joe Carenza Jr., head soccer coach, has been named the Division III Midwest Region coach of the year by the National Soccer Coaches Association of America/Metropolitan Life Insurance Co. Carenza has guided the soccer Bears to a 21-3 mark this season, the best record in school history. Overall, Carenza has a record of 150-63-18. He has had a winning season at WU every year with the exception of 1982 when the Bears finished 7-9-3.

Susan Crawford, Ph.D., director of the School of Medicine Library and professor of biomedical communication, was elected to serve a second four-year term as editor-in-chief of the *Bulletin of the Medical Library Association*, the international journal for biomedical communication. She also wrote papers on computer networks and computer-based information centers. The papers were presented at the Fifth International Congress on Medical Librarianship, Tokyo, Japan; 76th Annual Meeting of the Special Libraries Association, Winnipeg, Manitoba; and International Information Management Congress, Amsterdam, Netherlands.

Lonnie E. Haefner, Ph.D., professor of civil engineering, has been named an Alumni Regent of Northwestern University. Regents are selected for their continuing alumni leadership, support and professional achievements. Haefner, who received a doctorate in civil engineering from Northwestern in 1970, has been active in leadership conferences addressing the role of private universities in higher education and research.

Richard A. Watson, Ph.D., professor of philosophy, has learned that his book *The Philosopher's Diet: How to Lose Weight and Change the World* (Atlantic Monthly Press) is the winner of a 1985 American Health Book Award. In the book, Watson comments on his own profession: "The trouble with a discipline dedicated to the search for truth is that some people get to thinking they've found it."



Co-captains Mark Sparrow and Joe Polizzi hold the 1985 Lopata Classic championship trophy as Stanley and Lucy Lopata look on. The Bears beat Claremont-Mudd-Scripps 78-73 in this year's final to win the championship for the second consecutive year.

Basketball Bears win 2nd Lopata classic title

WU successfully defended its Lopata Basketball Classic title Saturday, Dec. 7, defeating Claremont-Mudd-Scripps Colleges of Claremont, Calif., 78-73. The Bears, now 6-2 this season, were paced by Kevin Suiter in the championship game as the 6-3 sophomore guard scored 22 points. For his efforts, Suiter was named the tournament's most valuable player.

Joining Suiter on the all-tournament team was the Bear's other starting guard, Brent Rueter. Rueter led the Bears with 17 points on Friday night as they defeated Johns Hopkins University 64-51.

In the consolation championship, Johns Hopkins edged Trinity University of San Antonio 66-65.

WU forwards Paul Jackson and Mark Sparrow also had strong tournament performances for the Bears. Jackson, of Pittsburgh, Pa., scored 29 points and grabbed 13 rebounds in two games.

A native of Quincy, Ill., and most recently an Illinois High School Basketball Hall of Fame inductee, Sparrow had 19 tournament points with 15 of those 19 in the title game. He also converted two crucial free throws with 34 seconds remaining,

preserving the Bears' second Lopata championship.

WU already has begun making plans for the 1986 Lopata Classic. The entrants for next year's event will be the same ones that attended last year's inaugural tourney — Johns Hopkins, MIT and Caltech.

The classic is made possible by a gift from Stanley Lopata, a WU alumnus and trustee. Lopata is chairman of the board and chief executive officer of the Carboline Co. and a prominent St. Louis civic and business leader.

Raymond L. Williams, Ph.D., associate professor of Spanish, presented a paper titled "Recent Trends in the Spanish Novel" in the plenary session of the Mountain Interstate Conferences on Foreign Languages, Oct. 3-5. He has edited and published a book *Ensayos de Literatura Colombiana* and has written the book's introduction (Bogata: Plaza y Janes, 1985). He also has written an article, "An Introduction to the Early Journalism of Garcia Marquez: 1948-1958," for the Latin American Review issue covering January-June 1985.

Have you done something noteworthy?

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

Pathologist, computer company join efforts to create new record system

A pathologist at WU School of Medicine is working with the St. Louis-based computer company Management Techniques Inc. to develop a unique computerized system for autopsy records.

The system is believed to be first in the country to automatically cross-index the two leading systems for classifying and encoding anatomic pathology and clinical diagnoses. If successful, it could be adapted by health care institutions nationwide as a means of increasing the precision of diagnoses and the classification of diseases.

The model system will be created under a \$50,000 Small Business Innovation Research grant awarded by the National Institutes of Health (NIH) to Management Techniques Inc. Daniel W. McKeel Jr., M.D., director of the Division of Autopsy Pathology at the School of Medicine, is project consultant.

In the next six months, McKeel and Robert Levitt, president of Management Techniques, hope to develop and implement a comprehensive management information system for autopsy records. The system will automatically encode, retrieve

and correlate clinical and pathological diagnostic data.

Computer software will code records using the two major classifications of diseases — Standard Nomenclature of Medicine (SNOMED) and International Classification of Disease, Version 9, Clinical Modification (ICD-9-CM). The software will be transferable to major computer systems, and will be efficient in a distributed network of microcomputers.

After completing the model system, McKeel and Levitt will be eligible to apply for a phase II grant, which would provide funding to develop a product for commercial marketing.

The Small Business Innovation Research program was created in 1982 to stimulate technological innovation within the small business community, provide the small business sector with an increased role in federal research and development, and attract private capital to commercialize the results of federally funded research. McKeel and Levitt applied for the grant after attending a special conference sponsored by the Regional Commerce and Growth Association.

CALENDAR

Dec. 12-21

LECTURES

Thursday, Dec. 12

Noon. Dept. of Biology Seminar, "Hormonal Regulation of Alpha-Amylase Gene Expression in Barley-aleurone Cells," Jake Jacobson, dept. of biology, Michigan State U. 322 Rebstock.

Friday, Dec. 13

4 p.m. The 13th Annual Carl Vernon Moore Memorial Lecture, "Oncogenes: Trouble in our DNA," J. Michael Bishop, prof. of microbiology and immunology and director of The Hooper Research Foundation, U. of Calif.-San Francisco. Carl V. Moore Aud., 1st fl., North Bldg., 4580 Scott Ave.

Monday, Dec. 16

Noon. Respiratory Disease and Critical Care Medicine Division Research Seminar, "Fibronectin-Receptors and Fibronectin-Degrading Proteases on the Invasive Cell Surface," Wen-Tien Chen, assoc. prof. of anatomy, Georgetown U. School of Medicine and Dentistry. Sponsored by WU medical school, Jewish and Barnes hospitals. Brown Room, Jewish Hospital.

4 p.m. Dept. of Earth and Planetary Sciences Seminar, "Intraplate Stresses and a New Tectonic Mechanism for Relative Sea-level Fluctuations," Sierd Cloetingh, U. of Utrecht, The Netherlands. 102 Wilson.

1-5 p.m. Dept. of Biological Chemistry Seminar, "Phospholipid Turnover and Protein Kinase C Activation." Also sponsored by the Howard Hughes Medical Institute. Carl V. Moore Aud., 4580 Scott Ave.

Wednesday, Dec. 18

2 p.m. Dept. of Engineering and Policy Lecture, "Technology Transfer to Third World Women Via Networks of Cooperatives," Jeanne Greer, WU master of science degree candidate. 104 Lopata.

Thursday, Dec. 19

Noon. Central Institute for the Deaf Research Seminar, "The Role of Acoustic Signal Partition in Listener Categorization of Clarinet, Violin, and Trumpet Musical Phrases," Roger Kendall, asst. prof. of music, UCLA. 2nd fl. aud., Clinics and Research Bldg., 909 S. Taylor Ave.

MUSIC

Friday, Dec. 13

8 p.m. Dept. of Music WU Symphony Orchestra Concert directed by Seth Carlin, WU assoc. prof. of music. Holmes Lounge.

EXHIBITIONS

"Brothers Grimm: 200 Years." Through Dec. 16. Olin Library, level 3. Regular library hours.

"Images of Aristocrats and Republicans." Through Dec. 29. Gallery of Art, lower gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Pierre de Ronsard (1524-1585): An Exhibit of Books and Papers Commemorating the 400th Anniversary of the Poet's Death." Dec. 16-Feb. 28. Olin Library, Special Collections, level 5. 8:30 a.m.-5 p.m. weekdays.

"Master of Fine Arts Thesis Exhibit," by artists Michael Rosenfeld and Lesa Unterbrink. Through Dec. 15. Bixby Gallery, Bixby Hall. 10 a.m.-4 p.m. weekdays; 1-5 p.m. weekends.

"Diversity in the Salon." Through Dec. 29. Gallery of Art, lower gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Photographs in the WU Collection." Through Dec. 29. Gallery of Art, print gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.



Love Feast: Alexis Joseph Mazerolle's "Les Agapes" (The Love Feast) imitates the style of Leonardo da Vinci's "Last Supper." Mazerolle's oil on canvas, painted in 1877, is exhibited through Dec. 29 in "Diversity in the Salon" in the Gallery of Art's lower gallery in Steinberg Hall. The Love Feast was a pagan event adapted for early Christian rites, according to Joseph D. Ketner, acting director of the Gallery of Art. The Salon was the official French Academy Exhibition Hall.

"Edward Boccia: The Triptychs." Through Jan. 5. Gallery of Art, upper gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Projects and Drawings: 1978-1985" by Mario Corea. Through Dec. 17. Givens Hall.

PERFORMANCES

Friday, Dec. 13

8 p.m. Guthrie Theater Presents Charles Dickens' "Great Expectations" at Edison Theatre. General admission is \$15; WU faculty, staff and senior citizens, \$10; and students, \$7. For more info., call 889-6543.

FILMS

Friday, Dec. 13

7 and 9:30 p.m. WU Filmboard Series, "A Clockwork Orange." \$2. Brown Hall. (Also Sat., Dec. 14, same times, and Sun., Dec. 15, at 7 p.m., Brown.)

Midnight. WU Filmboard Series, "Paper Chase." \$2. Brown Hall. (Also Sat., Dec. 14, same time, and Sun., Dec. 15, 9:30 p.m., Brown.)

MISCELLANY

Sunday, Dec. 15

2:30 p.m. Friends of Tyson Bird Banding

Workshop with R.W. Coles, WU prof. of biology and director of the Tyson Research Center. Tyson Central Administration Bldg.

Calendar Deadline

The deadline to submit items for the Jan. 16-25 calendar of the *Washington University Record* is Jan. 2. Items must be typed and state time, date, place, nature of event, sponsor and admission cost. Incomplete items will not be printed. If available, include speaker's name and identification and the title of the event; also include your name and telephone number. Address items to King McElroy, calendar editor, Box 1070.

Virus-resistant plants — continued from p. 1

TMV multiplies in plant cells where it disrupts normal cell functions and reduces crop productivity.

Beachy's idea was to transform a plant cell to enable it to express a part of TMV's genetic material. The research team isolated the TMV gene that encodes the coat protein of TMV — a protein sheathing around the virus.

Using a plant transformation vector supplied by Monsanto, the coat protein gene was inserted into the chromosomes of tobacco and tomato plant cells. These transformed cells were regenerated into whole plants that subsequently were infected with active TMV virus.

In the experiments, 240 plants were used, of which 65 percent were transformed to express the TMV coat protein. The remaining 35 percent were used as controls. The researchers found that the plants transformed with the TMV gene either delayed or prevented the appearance of symptoms characteristic of TMV infection.

"The results show that expression of TMV coat protein in the transformed plants delays or prevents the symptoms of infection," Beachy says. "We know that the product of the gene we inserted is first a messenger RNA that then is translated into protein. We do not yet know whether the RNA or the protein itself

is responsible for the resistance."

Although the exact mechanisms are not yet identified, Beachy speculates that the techniques for producing plants resistant to TMV can be applied to many different crops and the viruses that attack them.

The measurable resistance under greenhouse conditions suggests that resistance levels currently available could be applied to field situations. In addition, increasing the amount of TMV coat protein expressed by the plants may also amplify resistance levels of field crops.

Results of the experiments are now being prepared for publication in a major scientific journal.

Robert Brock

Employees' contributions exceed United Way goal

The United Way theme this year is "Doing Something About It" and, for the sixth year, WU employees have done just that by surpassing the University's campaign goal, which was \$130,000.

The 975 employees participating in the United Way campaign contributed a record \$137,063. The University will receive an award for Outstanding Achievement from the United Way of Greater St. Louis for exceeding its goal during the fall campaign.

Thomas A. Harig, director of General Services, is WU's United Way campaign chairman, and Chancellor William H. Danforth is chair-

man of the St. Louis United Way Board of Directors.

Four employees who contributed to United Way received prizes through a drawing held last month. All employees contributing to the campaign were eligible to win. William E. Knipp, director of the Internal Audit Office, drew the winners' names.

Agnelli Quinones, technical assistant in the psychiatry department at the medical school, won the first prize of a dinner for two at Kennedy's Too. Betty Conner, housekeeper at Olin Residence on the medical school campus, received a gift certificate for a 20-pound turkey

as the second-prize winner. Charles R. McManis, J.D., professor of law and the law school's United Way solicitor, received the third prize, a \$10 gift certificate at Schnucks. Fourth-prize winner Morton P. Pincus, Ph.D., assistant professor of accounting, won a \$5 Schnucks gift certificate.

This year's campaign coordinators were Florence Z. Freeman, administrative officer in purchasing; Gene Mueth, assistant business manager at the medical school; John P. Sahrman, D.M.D., assistant professor of orthodontics; and Daniel Shea, Ph.D., professor of English, serving as the Hilltop faculty representative.