Nemerov is named U.S. Poet-Laureate

As the Record went to press, word was received that Professor Howard Nemerov was named U.S. Poet-Laureate. Details will appear in the June 2 issue.

Some 2,100 are degree candidates for Commencement

Some 2,100 students are degree candidates for Washington University's 127th Commencement ceremony on Friday, May 20. The total comprises 1,014 graduate students and 1,087 undergraduate students.

Candidates for the doctoral level degrees number 74 for the doctor of philosophy degree and two for the doctor of education degree. The Graduate School of Arts and Sciences; 123 for the doctor of medicine degree; 61 for the doctor of dental medicine degree; 180 for the doctor of law degree; and 20 for the doctor of science degree in engineering.

Some 590 graduates who received degrees in August and December have been invited to participate in the Commencement exercises. Alumni from the class of 1938 also have been invited to march in the procession.

The academic procession will start at 8:30 a.m. at Brookings Quadrangle. In case of rain, the ceremony will begin at 10 a.m. at The Arena, 5700 Oakland Ave.

Richard W. Coles, Ph.D., director of the University's Tyson Research Center, will serve as grand marshal of the ceremonies. Arthur E. Carlson, Ph.D., professor emeritus of accounting, will be the honorary grand marshal. The marshals representing each school will accept symbolic diploma covers for their classes.

Chancellor William H. Danforth will confer seven honorary degrees. The Commencement address will be given by Sen. Thomas F. Eagleton, who will receive an honorary doctor of laws degree. The Democratic former U.S. senator from Missouri was elected to three consecutive terms in the Senate, served as Ranking Minority Member of the Senate Committee on Government Affairs and was a member of the Foreign Relations Committee and the Committee on Intelligence. He currently is University Professor of Public Affairs at Washington University. The Eagleton Commencement speech is titled "Change: The Agony and the Ecstasy."

The six other candidates and their honorary degrees are: Bernard Bailyn, Ph.D., Adams University Professor at Harvard University and director of the Charles Warren Center for Studies in American History, is a Pulitzer Prize-winner; author of heretofore, Richard W. Coles, Ph.D., director of the Tyson Research Center, is a Pulitzer Prize winner; author of heretofore; Robert J. Glaser, M.D., director for the Behrhorst Development Foundation in Guatemala, which is renowned worldwide as a model of rural health care; doctor of humanities; Robert J. Glaser, M.D., director for the Behrhorst Development Foundation in Guatemala, which is renowned worldwide as a model of rural health care; doctor of humanities; Harlan Lane, M.D., formerly chief of the rheumatic fever clinic and the immunology division at the medical school, doctor of medicine; J. Craig Venter, M.D.; Higgins Professor of Biochemistry at Harvard University, is one of the nation's top biochemists, doctor of medicine; and David W. S. H. Gold, formerly professor of accounting, will receive the honorary grand marshal. Student marshals representing each school will accept symbolic diploma covers for their classes.

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Athletes finish most successful year in NCAA

By winning the conference championship in men's outdoor track and field, Washington University completed its most successful year of NCAA Division III athletics with six conference championships, four NCAA tournament-qualifying teams, and 13 individual national championship qualifiers.

The men's indoor and outdoor track and field teams joined the women's volleyball, men's soccer, and men's and women's basketball teams as University Athletic Association champions in the league's inaugural season of competition. The University of Rochester won seven UAA titles, including a championship in women's soccer, a varsity sport not offered at Washington University.

Washington University also captured three UAA runner-up titles as well as one third-place title. No Bear squad finished lower than fifth in the nine-team University Athletic Association.

This spring, Bear fans were treated to several outstanding individual performances. In baseball, senior Cornell Foggie of Brooklyn, N.Y., shattered six career records and moved into the number two spot in three others. Foggie finished his four illustrious years with these career records: base hits (205); games played (159); runs scored (164); triples (12); base on balls (91); and career batting average (.390). He was second in runs batted in (125); doubles (52); and stolen bases (71).

On the track, four Bears — Marvin Williams of Little Rock, Ark., Gary Summers of Port Washington, N.Y., Ron Champagne of Evanston, Ill., and Andre Cook of Rockford, Ill. — have qualified for the NCAA Division III Track and Field championships, which begin next Wednesday in Northfield, Minn. The Bears' 4 x 100-meter and 4 x 400-meter relay teams — comprising Williams, Summers, Champagne, and Cook — have bettered the national qualifying time, along with Williams in the 400-meter intermediate hurdles. The men's tennis team is being represented this weekend by its top two singles players, Duncan Seay of La Jolla, Calif., and Jason Mudd of St. Louis, at the NCAA championships in Lexington, Va.

Seay, who is ranked 10th in the nation, is competing in his third consecutive tournament, while Mudd, ranked 98th nationally, is making his NCAA tourney debut in his rookie season. The duo are entered in the 64-player singles tournament and also the 32-team doubles championship.

"The successes of our athletes and teams this spring has carried over from the fall and winter seasons," said John Fran Hooker, 889-5202, Assistant Athletic Director. "We've enjoyed an outstanding, memorable year in this, the inaugural season of the University Athletic Association. Our student-athletes continue to succeed on the field as well as in the classroom."

Indian music concert series opens with sitar performance

Hindustani sitarist Ursan Khan will perform a concert of Indian music at 7:30 p.m. May 20 in Holmes Lounge. A sitar is a lute-like instrument of India with a long, fretted neck. The concert is the first in a series of Indian music concerts to be co-sponsored by the music department and Sangetha, a non-profit organization devoted to promoting the classical music of India.

Khan, who regularly performs on All India Radio, has toured Europe, the United States, Canada and Sri Lanka. He was a featured artist at the "24 Hours Raga Session" held in Paris in 1985, and performed at the International Guitar Festival in Marsellis in 1986.

Khan will be accompanied by Nishant Barodekar on tabla. A tabla is a small drum that is struck with the fingers and palm of the hand.

Admission for the concert, which is funded in part by the Missouri Arts Council, is $10 for adults, $5 for students.

Commencement -- continued from p. 1

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Awards presented during the exercises will include the Life Achievement Award, the Willard J. and Grace L. Bloomer Award, and the President's Award. The commencement speaker will be Lesley R. Malin, who will graduate with a bachelor's degree in chemical engineering.

Black employees and benefits

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Joseph R. Allen, Ph.D., assistant professor of Chinese in the Department of Asian Languages and Literatures, published a study of a contemporary Taiwanese poet. Titled "Lo Ch'ing in the Shadow of Confucius: Configurations of the Literati Tradition," it appeared in Modern Chinese Literature and Culture.

Karen L. Brock, Ph.D., assistant professor of art history, has published "Awaiting the Future Buddha" in Meditation: The Future Buddha, published by Cambridge University Press. She also has received a grant from the Asia Council of the Association for Asian Studies to participate in the annual meditation seminar of ancient Buddhist monasteries in the storehouse of Kozanji temple in Kyoto. She is researching the history of the temple.

Andrew D. Dimmogastinos, Ph.D., William Palm Professor of Mechanical Design in the mechanical engineering department, was a member of the organizing committee for the Second International Conference on Rotating Machinery, held April 5-7 in Honolulu, Hawaii. He chaired a session and presented a paper, titled "Crack Detection by Ultrasonic Filters."" The conference is funded by the Greek Center of Planning and Economic Research. Published by the American Anthropological Association, has been awarded a Fulbright Fellowship in Taiwan. Wu Sheng, in the spring 1988 issue of Chinese PEN (Taipei) magazine.

John Balcom, a doctoral candidate in Chinese and comparative literature, has published translations of four poems of the contemporary Taiwanese poet Fu Sheng, in the spring 1988 issue of Chinese PEN (Taipei) magazine. Balcom has published other works by poets Hsia Ching, Pai Chiu, Lo Fu, Chou Meng-tieh and Hsiang Yang in previous issues of the journal.

John R. Bowen, Ph.D., assistant professor of anthropology, has been awarded a National Endowment for the Humanities Fellowship for University Teachers, for a project on language and Islam in Indonesia. He presented "Verbal Performances and Political Change in the Galusma Kingdom of Sumatra" at the American Anthropological Association annual meetings in Chicago and "The Social Meaning of Islam in Indonesia" at the American Ethnological Society annual meetings in St. Louis. His article titled "The Galusma Region: Property System, Adat, Islam, and Social Change in Indonesia" appears in the May issue of American Ethnologist.

Paul Boyarsky, M.D., J.D., professor of urology, presented a paper, "Witness Bias: Diagnosis and Treatment," at the St. Louis Metropolitan Medical Society meeting. He also spoke on "Unraveling Medical Records" at a joint seminar of the Medical Legal Committee of the St. Louis Metropolitan Medical Society and Metropolitan Bar Association of St. Louis, held April 8 at the Omni International Hotel.

Wayne G. Bragg, Ph.D., is an associate professor of technology and international development, and Eugene R. Shultz Jr., professor of engineering and applied science, has been named a Member of the Consumer Appeals Board for the St. Louis Regional Office of the Federal Trade Commission. The consumer board was established in response to the federal Magnuson-Moss Consumer Warranty Act, which requires it to resolve consumer disputes. The board hears complaints by consumers when the dealers' failure to repair defects.


Missook Lee, a University College student who studies piano with Seth Carlin, has received the Artists Presentation Society Audition Award. Lee was one of three musicians honored in the national competition, which was established 40 years ago to recognize young talent. Performers must have given two full-length recitals to be eligible for the competition, which is open to musicians under age 35 who live within 150 miles of St. Louis. Lee, who earned a bachelor's degree in music at Indiana University, will be presented in a major recital during the Artist's Presentation Society's 50th season. In addition, the award carries a $450 honorarium.

John C. Morris, M.D., assistant professor of neurology, gave a lecture, titled "The Neuropsychology of Alzheimer's Disease: The Borderline Between Dementia and Normal Aging," at the University of Kentucky Medical Center. The conference was held in response to the March 12 issue of the Economist.

American artist Frederic Remington has been awarded artistic credibility in Germany. The St. Louis Art Museum recently hosted the first large-scale exhibition of his works. On National Public Radio's "Morning Edition," Angela Miller, Ph.D., assistant professor of art and architecture, helps explain why Remington's genius has not been appreciated by the art community until now.

Research shows that pain is partly a learned response—on one that can also be unlearned, says an article in the April issue of the Journal of Pain Research. "If the pain is not in the best interests of the patient, self-imposed pain behavior such as complaining, and to get rid of only those functions that are not in the best interests of the patient.

College Bowl team heads to nationals

For the second consecutive year, a team from Washington University will compete in the 1988 College Bowl National Championship Tournament. "George Bowl" will be held May 27-29 at the University of Illinois at Chicago. In College Bowl, billed as "the varsity sport of the mind," a quiz game format is used to recognize students' intellectual achievement and help them learn about the value of group participation. To receive points, students must answer correctly questions on a variety of topics, including history, literature, current events, science and art.

The members of the Washington team are: freshmen Robert A. Skinner and Robert Corey Booth, both of Sioux City, Iowa, and alternate Mark Zackin from Long Beach, Conn., and alternate Mark A. Ramsey from Centralia, Mo., and Paul Wen-Sin Cheng from Ke- war, also both freshmen. The team members last year, Susan A. Burke, assistant director of student activities, is the team's captain.

Among the 16 schools competing in Chicago are Harvard/Radcliffe, Cornell, Princeton, Georgetown and the University of Minnesota. The matches will not be taped for television, as they were last year, for the "Dreams for the Disabled" fund.

Washington team members won all five matches they played at the regional tournament, which was held Feb. 26 and 27 at Oklahoma Baptist University in Shawnee, Okla., the site of last year's regionals. Twelve universities competed at the regionals, which included schools from Missouri, Oklahoma, Kansas and Nebraska.
Gallery of graduates

Commencement is a rite of passage for students who once walked the cobblestone paths of Washington University. It is not only a tribute to them, but a tribute to the efforts of all those associated with the University. The students work diligently to earn a degree and an academic record symbolizing their talents and accomplishments. The faculty also works diligently to create a course of study that is interesting, as well as educational.

Some 2,000 students will graduate on Friday. Each has his or her own special story to tell of the varied paths that led them to Washington University and their experiences since they’ve been here. The following stories tell about the interesting lives of six graduating students.

Student’s case ends in U.S. Supreme Court

As Washington University political science major Leslie Smart completes her degree, she also ends her five-year involvement in a court case that went to the U.S. Supreme Court for resolution.

The case, Kuhlmeier et al v. Hazelwood School District, began in 1983 when Smart was a student and staff member of the school newspaper at Hazelwood East High School in Hazelwood, Missouri. She and two other Hazelwood East students had sued the school board and administrators in the case involving alleged censorship of Spectrum, Hazelwood East High School’s student newspaper. Principal Robert E. Reynolds stopped the publication of stories written for the May 13, 1983, issue of Spectrum that he considered irresponsible. He has said he was protecting the privacy of students and parents mentioned in the articles. The stories dealt with teenage pregnancy and the effects of divorce on students at Hazelwood East.

Reynolds has said he objected to the teenage pregnancy article because the identification of the students could be surmised even though the names had been changed in the story. He also has said he believed the subject matter was inappropriate for high school freshmen. The article on children of divorced parents contained a disparaging remark made by a student about a father. Reynolds protested that the parent was not given the opportunity to explain or defend himself.

In response to Reynolds’ action of pulling the articles, Smart and the other two respondents charged the high school and school district with violating their First Amendment rights. Smart joined the lawsuit even though she had not written any of the disputed articles herself.

In May 1985, the District Court of St. Louis ruled in favor of the school district, basing its decision on the belief that Spectrum was part of the school’s curriculum. The U.S. Court of Appeals reversed the lower court’s decision after the case was brought before the court in November 1985. In its decision, the court said that the newspaper was a public forum because it was produced by the students.

The case then was appealed to the Supreme Court, which ruled 5-3 in early January 1988 in favor of the school district. This controversial ruling means that high school administrators have broad authority to limit student expression in school-sponsored newspapers. The main issue of the case was whether a school newspaper is a public forum, allowing educators to exert editorial control.

Writing the majority opinion, Justice Byron White said Principal Reynolds had acted “reasonably” when he cut articles from the student newspaper. In the
Justice William J. Brennan Jr., wrote, "I don't think I'd do it again. It (the Supreme Court decision) does not . . . license . . . thought control for students; the school has a monopoly on the voice of the students."  

Speaking for the dissenting justices, Justice William J. Brennan Jr., wrote, "The mere fact of school sponsorship is vital, along with a good educational background. I think Washington University has given me both."

Future, White said, a school administration need only show that its censorship was reasonable. In the decision, comparisons were made to the 1969 case Tinker v. Des Moines Independent Community School District, in which the Supreme Court ruled in favor of the students who wore black arm bands to school to protest American involvement in Vietnam. Justice White stated that the Tinker case did not apply to Kuhlmeier because Tinker involved expression that "happens to occur on school premises" while the Kuhlmeier articles were to have been published in a school-sanctioned paper.

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"I don't think I'd do it again. It (the Supreme Court ruling) has limited expression for all students."

—Leslie Smart

never report bad news, express unpopular views or print a thought that might upset its sponsors." Smart expressed her disappointment with the decision in an interview with Student Life, "I think I'd do it again. It (the Supreme Court ruling) has limited expression for all students."

Many a college graduate has experienced the frustrating reality of the adage "It's tough to get a job without experience, and it's tough to get experience without a job." But Washington University senior Jeff Unterreiner has found a unique method of avoiding that Catch-22 situation.

He has started his own business. With an assist from a trust fund, Unterreiner is the majority owner of a retail clothing store, Coast 2 Coast, in his hometown of Cape Girardeau, Mo. The store, specializing in beachwear, opened its doors in November 1987. Despite its comparatively early entry into the business world, Unterreiner said that he actually formulated the idea back in his freshman year.

"My friends and I take a vacation every summer to Hilton Head, S.C., where there are several stores like mine," he said. "We really liked the clothes we'd buy there and when we'd get back all our friends would want to know where they could get something similar. Unfortunately, the closest place to go would be Memphis, Tenn., or St. Louis — both of which are over two hours from Cape Girardeau. Basically, the college town was ready for it."

Unterreiner is quick to praise Washington University's role in his overall development.

"I love the way the business school here is set up," he said. "At other schools, you've got to take three or four classes in your major each semester. At Washington, you take a wide variety of subjects your first couple of years and then go into your interest. Almost every class I've taken has, in some way, helped me in my business."

Unterreiner concluded, "Experience is vital, along with a good educational background. I think Washington University has given me both."
As he ended his four years at the School of Medicine and prepares for a residency in anesthesiology in Seattle, Geoffrey Graeme Thompson has had to put his dreams of becoming a Shakespearean actor on hold.

He’s also had to hang up the ballet slippers he wore during a year with the Dublin City Ballet, and to set aside both the spear he carried as an extra in the movie version of a play she’d written. "Like most actors, I'd studied dance because it’s the best way to handle college-level classes. After a successful year at UM-St. Louis, Symeonoglou invited her to join the summer 1985 expedition team and before she knew it, the former production artist was boarding a plane for her first trip overseas — to explore a foreign land, language and profession.

"I thought about it a lot before I changed careers," Wamser says. "Everyone thinks archaeology is interesting, but when you tell them you're doing it they probably found a new recruit by now. But the angel on her right, no doubt, is feeling rather smug."

Actor stars in medical school; dreams of Shakespearean glory put on hold

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"I find it remarkable that she can be an archaeologist. That's what will turn her into a good actor, plus they needed a strong actress and she filled the bill," he says. "Nancy has made a tremendous effort to fulfill her dream. She has come a long way in the last three years just becoming familiar with these new areas of knowledge: "I think they liked my stage presence and acting ability, plus they needed a strong guy to hoist around some of the women dancers."

After graduation, he spent the summer touring with the Dublin City Ballet, then headed to London to gain some acting experience. But his American accent worked against him, and he ended up with more dancing jobs than acting jobs. "I tried hard to lose my California accent, and eventually won a few roles in London's 'underground' theater — that's their off-Broadway."

But his diligent efforts backfired when he returned to New York after a year in London.

"The agents and casting directors in New York didn't know what to do with me because they couldn't categorize me as a type," he recalls. "I looked like a surfer, and they couldn't figure out what I sounded like, but they knew it wasn't a commercial sound."

"Anxious Objects," was finally shown about four months ago on Irish television. "It got, um, that was an uncritical review," says Thompson. "But it was fun to do. And seeing myself on film convinced me that medical school was the right decision."

"Anxious Objects" turned out to be the highlight of his acting career. Slowly, his dreams of Shakespearean glory were eroded by the more economic realities of show business: "I've been fortunate to represent me unless I was willing to do soap operas and such, so I
had the need to give of myself, to make a connection with other people and maybe make a difference in their lives. Medicine is a good place for a person like that to be."

\[\text{Geoffrey Graeme Thompson}\]

concentrated on losing the mid-Atlantic accent I’d developed in London. Then, when I tried to audition for serious roles in off-off-Broadway productions, I was told that I sounded too commercial! I did get a bit part as a spear carrier at the New York City Opera. That was a kick. I love opera.”

But most of the time, he waited tables.

After four years, he made what he calls “a last, desperate trudge to Los Angeles. I was trying to find a happy medium between being a soap opera star and an unemployed actor.” Instead, he found what seemed to be a conspiracy of sustained casting directors who kept urging him toward the soaps.

It was as good a time as any to switch gears. “I was tired of spinning my wheels. I wanted to find something as challenging as acting but with more stability and self-direction; a profession where, if you worked very hard, you could be assured of a chance to practice a profession at the end of an allotted amount of time.”

Because of a lifelong interest in medicine (his mother is a pediatrician and his father is an orthopedic surgeon), medical school was the next role for which he auditioned. This time, he got the part.

As it turns out, Thompson’s training in dance and drama prepared him well for the rigors of medical school: he describes both the theatre and medicine as highly competitive, requiring discipline and dedication. “What’s been most helpful about my acting background, though, is that it gave me something of my own, skills and knowledge that I could respect about myself in the dark days when medical school seemed like a vast, endless tunnel of overlapping books,” he says.

Once his medical career is established, Thompson would like to return to acting part time, perhaps at the soap operas.

A physics lab isn’t the customary locale for a painting of a New York City skyline. But in a Washington University lab Plinio Santos Filho calls home, paintings, drawings and even sculptures stashed amid huge superconducting magnets and spectrometers are the norm.

Santos Filho, who will receive a doctorate in physics from Washington in November, creates the art that adorns his lab on the first floor of Crow Hall. But the lab isn’t the only showcase for his work. Late last year, the native of Caruaru, Brazil, was one of 100 local visual artists selected to exhibit their work in the Art St. Louis III exhibition in downtown St. Louis, which was organized by the St. Louis Artists Coalition.

An Anheuser-Busch Cos. Inc. representative saw one of Santos Filho’s paintings titled “Tormented Bull” and purchased it for the company’s permanent collection, which will tour Anheuser-Busch plants across the country beginning this year. In 1986, Santos Filho had two one-man shows of his work at the St. Louis Public Library. Showings of his work also have been held at the Garret Gallery and Studios in Normandy, Mo., and in Brazil.

After receiving his doctorate in physics, Santos Filho, an artist since childhood, plans to use his scientific knowledge to conserve art masterpieces. He currently is preserving a 1963 painting by Fogel, an American abstract artist, for the physics department. The painting normally hangs in a Compton Hall classroom.

Next year, he hopes to work in an art conservation lab in Milan, Italy, where scientists are preserving Leonardo da Vinci’s famous painting of “The Last Supper.” He eventually plans to establish an art conservation lab at the Universidade Federal de Pernambuco in Recife, Brazil, where he received a bachelor’s degree and a master’s degree in physics. He also has a master’s degree in physics from Washington. He has received a sciences scholarship from the Brazilian government since he began college.

My scientific background means I have access to information most painters don’t have,” explains Santos Filho, who has created approximately 50 paintings and 500 drawings since he came to St. Louis. “For example, most painters don’t realize that fluorescent lights are deadly to paintings. The ultraviolet component of the lights yelloww drawings and paintings. As a physicist, I know that.”

Santos Filho’s scientific knowledge also enables him to “study the techniques of painting, such as why color interacts, and determine how long paintings will last. And by using electron microscopy, a standard physics technique, one can analyze specks of dust from works of art to identify the art materials.”

Other scientific tools available to Santos Filho for art preservation include holography; nuclear magnetic resonance; and infrared photography. “These techniques can be used to understand the aesthetic and technical beauty of art,” he says.

Santos Filho considers himself lucky to be successful in two fields that he enjoys. “I really love painting and physics,” he says. “Painting is an absolutely necessary madness — without it I can’t function. It’s a fulfillment of visions and you have to get it from them. These images have to get out and the only way I can get them out is putting them on canvas. And painting is a universal language. We all see colors.”

“As for physics, I’ve been studying the hydrogen that’s inside materials that comprise solar cells. That gives me an insider’s look at nature because I’m looking at the atoms themselves, I can see them at play. I have that same insider’s view when I look at paintings. I see the artistic quality of the brush stroke and I can determine whether the painting has decayed.”

Besides physics and art, Santos Filho also finds time to build and sell puppets via the Santos’ Puppet Workshop, which he operates with his wife, Regina. He has built puppets since he was 8.

The serious physicist and father of three also plays the flute. During his college days in Brazil, he recorded an album with a band called Cactus Flower, which specialized in modern Brazilian music.

\[\text{‘Leaving Home’ title of student’s speech for Commencement}\]

Washington University senior Lesley R. Malin is about to perform her most challenging role — herself.

The arts and sciences senior from Memphis, Tenn., has performed various roles in student productions and recently played the character of Hester Salomon, the magistrate in the Performing Arts Department’s production of “Equus.” On May 20, she will portray a character closer to home when she delivers the student Commencement speech.

“When you give a speech, you’re more connected with the audience,” says Malin, an English and drama major. “You’re playing to the audience much more than you ever could on stage. On the stage, you’re always aware of the audience but you really have to focus on communicating with other characters.

“In a way, giving the Commencement speech is harder,” she says. “Some actors are shy people. In the theatre, I can hide behind my character. But with the speech, I have to be myself.”

Malin has titled her speech “Leaving Home.” Referring to her fellow students, she says the speech “details how Washington University has been home for us for four years. Now it’s time to leave home again, just as we did when we arrived here. It’s a time when we’re scared about the unknown — the same way we felt when we entered the University.”

“Although we’re somewhat frightened, we’re also extremely excited,” says Malin, who recently received the English and drama departments’ Dramatics Club Prize for her essay on black comedy. “We’ve mastered Washington University and now there’s the whole new world out there waiting for us. Because of our experiences at the University, we’re equipped with the necessary ingredients to be successful.”

\[\text{Lesley R. Malin}\]
New technologies improve outlook for very premature infants

Carley Nadler weighed slightly more than a pound when she was born 11 weeks early two summers ago. A mere 13 inches long, she could wear her father’s wedding ring as a bracelet.

Carley is one of a growing number of children who, thanks to recent advances in medical technology, is surviving after being born an entire trimester or so early, at weights as low as a pound.

Seven percent of all live births in the U.S. are premature, among which 5 percent are considered very low birthweights—under a pound and a half. These extremely low birthweight children require the development of entirely new technologies to deal with the unique problems of their immaturity, says F. Sessions Cole, M.D., associate professor of pediatrics at the School of Medicine and director of newborn medicine at St. Louis Children’s Hospital.

“With children who are slightly bigger, we have often been able to apply existing technology and they have done well,” he says. “But these children of 500 to 700 grams require the development of technologies to address what is essentially a whole new biology.”

In the last four years, equipment, medications and treatments have been devised for specific problems that these tiny tots encounter because their lungs, brain and skin are so far from ready to function outside the womb.

Not ready for air breathing

The overriding challenge in the care of all premature infants, according to Cole, is their immature lungs. They cannot yet adapt to air breathing. “If you were born at two pounds 20 years ago, you may have taken a few breaths or lasted a day or two,” he says. Today most of these infants are helped through mechanical ventilation, which blows tiny puffs of air in and out of their lungs.

Ventilation can be a frightening thing for parents, adding to Carley’s mother Angela, who recalls: “I heard her cry just before they put the tube in, then they took her away.” Yet mechanical ventilation has increased the survival chances among very low birthweight infants up to 15 percent, from 20 percent to almost 90 percent, says Cole.

Besides being unable to breathe on their own, premature infants at 35 weeks of gestation lack surfactant, a substance made of protein and fat that coats the lining in the lungs of older infants and adults, according to Jonathan Gitlin, M.D., associate clinical professor of pediatrics. Surfactant reduces surface tension in the lung in much the same way soap creates a film on a soap bubble, protecting it from collapse.

Studies by Gitlin while he was a postdoctoral student at Harvard show that one small dose of surfactant, which is poured down the trachea in liquid form, results in a need for less oxygen and less ventilation among newborns of the appropriate weight. Those babies who spend less time on the ventilator are less likely to develop lung disease and/or other complications associated with mechanical ventilation.

Although surfactant replacement therapy has been tested on newborns over the last seven years and many neonatologists are enthusiastic about its use, it is still on the outer fringe. And babies who spend less time on the ventilator are less likely to develop lung disease and other complications associated with mechanical ventilation.

 Threat of brain hemorrhage

Premature brains are prone to hemorrhages because of the rich blood supply that feeds their still multiplying and maturing brain cells, he explains. Known as the germinal matrix, the area of the brain that contains these differentiating cells is sustained by blood vessels that are poorly supported by the surrounding tissue and especially sensitive to a lack of oxygen. These vessels, however, disappear as the baby approaches full-term, according to Volpe. Thus, brain hemorrhages are rare among fully developed infants.

Another possible reason for these hemorrhages is that the brains of very premature infants may not be protected against blood pressure variations, says JeffreyPerlman, M.D., assistant professor of pediatrics. Low blood flow may injure brain tissues and hemorrhages may result when flow increases, he explains. “In adults, blood flow through the brain should be fairly constant, or autoregulated. We feel that the newborn brain is ‘pressure passive,’” he says.

For years, Volpe and Perlman have used modern monitoring technologies to analyze cerebral blood flow as a likely cause of brain injuries. Identifying two patterns of neonatal blood flow (fluctuating and stable), they found that more than 90 percent of the patients with fluctuating patterns suffered brain hemorrhages in the first days of life. Less than 1 percent of those with stable patterns, on the other hand, had hemorrhages.

Volpe and Perlman have been able to stabilize blood flow and reduce the incidence of hemorrhages by using drugs to induce muscle paralysis during the first 72 hours of life in infants whose blood pressure fluctuated more than 10 percent. “In a high-risk group where we previously would have had 80 hemorrhages, we were down to 20,” Perlman says.

Follow-up studies by the two men show that brain injury can be averted by preventing hemorrhages in this way, yet they seek other means of stabilizing blood flow. “Paralyzing is very drastic,” Perlman explains. “We’re trying to see if there are less noxious methods to prevent hemorrhaging.”

Premature skin too fragile

Premature skin is highly susceptible to infection and interferes with the ability of the infant to maintain body temperature. This sensitivity has challenged neonatal intensive care units to develop new monitoring tools that do not require tape on the skin and to develop other methods that protect the skin.

Very low weight newborns are also highly sensitive to fluctuations in temperature, says Cole. Warming tables used to incubate older infants in the neonatal unit are inadequate for very low birthweight babies. Even minor drafts created by a person walking past can cause the baby’s body temperature to drop substantially. Very low birth weight infants are now placed in double-walled isolates that prevent any kind of cooling from the outside.

The outside world also presents these still-developed immune systems with the constant threat of infection, according to Cole, whose own work involves the processes by which newborns produce their own immunologic weapons. Infants ordinarily fight infection with antibodies received from their mother, he explains; yet the transfer of these important protective factors is interrupted by premature birth.

Bonding delayed

Bonding with the parents is also interrupted, as these infants are on the average hospitalized for six months to a year. “The parents of these children are going through a unique situation. No other series of parents prior to several years ago has ever experienced a six- or eight- or twelve-month hospitalization of an infant who is apparently totally different from any other concept of a baby the parent has ever known,” Cole says. “How does one successfully involve a parent in the care of an infant who is so small and so sick for such a long time that it’s difficult to understand whether the infant is going to live or die, much less respond?”

Cole and his staff encourage parents to bring items to their children, as well as to become actively involved in their care. Angela Nadler visited her daughter Carley twice a day for the fourteen weeks she was hospitalized. She talked to her, held her, and played tapes made by Carley’s brothers.

Having addressed some of the more immediate problems of bonding and survival, neonatologists are now beginning to look at the long-term effects of their therapies on these children’s quality of life. Follow-up studies of premature infants of even higher weight show that one-third of these children will encounter medical complications of prematurity, and about 10 percent will face major medical problems that include lung disease, blindness, deafness or neurological abnormalities. Similar follow-ups are now being done on very low birth weight infants to determine the effectiveness of current treatments in light of future outcomes.

Yet for Mark and Angela Nadler, the fact that Carley is now at home with them is outcome enough. “All I wanted was for her to be alive and come home with me,” Angela says.
Eisen's research on skin disease gets MERIT award

Arthur Z. Eisen, M.D., Winfred A. and Emma R. Showman Professor of Dermatology at the School of Medicine, has been honored for his scientific contributions by receiving MERIT status for his latest grant.

The five-year grant, totaling more than $1.5 million, is from the National Institute of Arthritis and Musculoskeletal and Skin Diseases, part of the National Institutes of Health.

MERIT (Method to Extend Research in Time) awards provide long-term, uninterrupted support to investigators who have demonstrated superior achievement during previous research projects but may not apply for MERIT status, but are chosen in recognition of their continued contributions.

Those who receive MERIT status are freed from time-consuming paperwork and other delays traditionally associated with grant renewal applications. The initial five-year award is accompanied by an opportunity to extend it three to five more years, based on an expedited review of work accomplished during the initial period.

Arthur Eisen's studies of skin biology have added greatly to our understanding of the mechanisms that can cause debilitating and often fatal diseases of the skin, says Chancellor William H. Danforth. "It is especially appropriate that he receive MERIT status for his work, because it represents an ideal blend of basic science and clinical medicine.

Eisen's research focuses on defining a newly recognized gene family that is responsible for secreted enzymes called extracellular matrix metallopro- tease. The enzymes are essential for degrading proteins in the skin's connective tissue, especially collagen, the body's most plentiful protein and the molecule most responsible for holding cells and tissues together. They can also play a crucial role in tumor invasion.

By studying the nature, function and relationship of this protease gene family, scientists can better understand the structural disorders that cause degenerative skin diseases. For example, work in Eisen's laboratory has shown that these enzymes play an important role in the cause of epidermolysis bullosa (EB), a rare and painful genetic skin disease that blisters, scars, and destroys the skin and mucous membranes. They also play a crucial role in rheumatoid arthritis, a chronic disease that strikes most connective tissues of the body and can lead to immobility of joints, deformity and invalidism. The development of inhibitors of this family of metalloproteases may be of considerable value in treating these disorders.

Eisen joined Washington University in 1967 as an associate professor of medicine and head of the Division of Dermatology. Since then he has also served as dermatologist-in-chief at Barnes Hospital, a sponsoring institution of the Washington University Medical Center. He was named professor in 1971, and became Showman Professor in 1986.

Eisen is president of the Society of Investigative Dermatology and past president of the Association of Professors of Dermatology. He is the co-author of numerous publications on skin disease research and is co-editor of a major textbook in dermatology.

First in United States

Student exchange to be inaugurated with British dental school

Nearly 500 alumni, students, faculty and friends were on hand to honor Winfred A. Showman, M.D., a 1921 graduate of the School of Medicine, as he received the Distinguished Alumni Award at the annual medical alumni awards banquet May 7. Standing with Showman is his wife, Emme.

The School of Dental Medicine has plans to inaugurate the first student exchange program between a dental school in England and the United States. The program, a collaborative effort with the the Turner Dental School at Victoria University of Manchester, England, will involve an annual exchange of two students from each school for a 10-week period beginning in January.

"Acceptance into the exchange program will be the most prestigious award a student can receive from the dental school," says Robert J. McCune, D.D.S., professor and chairman of restorative dentistry, who came up with the idea to start an exchange program and has laid the groundwork for its initiation. "Students not only will be selected for excellence in academic and clinical skills, but for diplomatic skills as well," he says.

The goal of the exchange is to enhance an already well-rounded dental education, according to McCune. "We want to give the educational and clinical experience a more vivid and relevant dimension by making students aware of social and cultural factors in the delivery of dental care, and by helping them understand and appreciate the similarities and differences between the countries," he says.

Students accepted into the program will spend 60 percent of their time attending lectures and treating patients at the host school. The other 40 percent will be spent in areas of the student's choice. For example, those interested in basic research will work in the laboratory with basic science researchers. Students interested in pediatric dentistry will participate in the host school's pedodontic program. "We tailor the program to what the visiting student will most be interested in. The same will apply to our students who go there," McCune says.

At the end of the time abroad, detailed reports on the students' performance and progress will be sent to their home school to be used for crediting.

Members of this year's junior class, who will be the first to be able to participate in the exchange program when it begins next year, have expressed interest and enthusiasm, according to McCune. He noted that Columbus Dental, a St. Louis-based manufacturer of dental supplies and a division of Miles Pharmaceuticals of West Haven, Conn., has agreed to sponsor the program for the next five years, paying roundtrip airfare and lodging for two students each year.

In July David Bensingler, D.D.S., dean of the dental school, will visit the University of Manchester to officially inaugurate the program.

The research is part of a seven-year study of psoriasis.

Psoriasis study needs volunteers

Researchers at the School of Medicine are seeking volunteers to participate in a study testing a new treatment for psoriasis.

The research is part of a seven-center study funded by Sandoz Inc. to examine the effectiveness and safety of Sandostatin, a derivative of a natural compound that may reduce the severity of the disease by inhibiting skin growth.

The local study is directed by dermatologist Ann Martin, M.D., an instructor in medicine.

Martin needs patients who are healthy with psoriasis involving 10 percent or more of their body surface area. Volunteers must be aged 18-70, not pregnant or nursing, and within 25 percent of their normal body weight.

The double-blind study will last for 12 weeks, with participants randomized to receive injections of Sandostatin or a placebo. Patients will be evaluated five times during the study, and will have several free tests and procedures.

For more information about the study, contact patient coordinator Sharon Jenkins at 362-2643.
They might not jump off bridges or slit their wrists, but recent evidence from the School of Medicine suggests that some cells kill themselves, a phenomenon that might help explain the purpose and systematic loss of cells during development, as well as the untimely death of nerve cells in diseases like Alzheimer's.

There are a large number of situations during development in which cells are born, serve a purpose and then disappear. Tadpoles, for instance, lose their tails when they are considered to grow into frogs. Caterpillars shed their numerous legs before taking wing as butterflies. The human hand is paddle-shaped at first, forming fingers only after the cells between them die. And human fetuses start out with both male and female parts, eventually losing the organs they will not use.

Cell death plays an exceptional role during the development of the nervous system, which loses half of its cells before it is complete. According to David Martin, a third year graduate student in the medical scientist training program, Martin is the first scientist to present evidence that nerve cells commit suicide. Scientists have long thought that nerve cells simply wither away when their number is up, rather than playing an active role in their own demise. Yet Martin discovered new evidence to the contrary, while working with nerve growth factor (NGF), a protein that has been recognized for years as a critical ingredient for the survival of certain nerve cells.

Removing this factor from the nerve cells of rats, Martin observed, causes the cells to die—a phenomenon observed previously by others. But why?

The widely accepted theory was that NGF nourishes nerve cells, so that they waste away when deprived. But Martin was not quick to dismiss the other possibility that NGF somehow prevents nerve cells from killing themselves. Does NGF sustain life or prevent suicide?

To distinguish between these two possibilities, Martin treated the nerve cells with NGF, then blocked their ability to make protein. The cellular equivalent of tying their hands behind their back if the iceberg is found to be sinking away, then blocking their ability to make protein should, if anything, have made them waste away faster, he explains. But these protein-blocked cells did not die when deprived of NGF, indicating that nerve cells take an active role in killing themselves, rather than waiting away passively. The fact that neurons failed to die when unable to synthesize RNA or protein suggests that NGF normally suppresses the synthesis of killer proteins which are designed to kill the cell in the absence of NGF.

Martin reports in a recent Journal of Cell Biology article that NGF nourishes nerve cells, so that NGF nourishes nerve cells, so that nerves cells that innervate the brain—those that innervate the muscles. Parkinson's disease, on the other hand, is marked by the destruction of neurons which make the neurotransmitter dopamine.

The idea that cell suicide might be involved in the untimely death of nerve cells in neurodegenerative disorders is interesting enough that Martin's work is now partially funded by Washington University's Alzheimer's Disease Research Center.

The nerve cells in which Martin observed cell suicide are sympathetic neurons—nerve cells outside the brain or spinal cord that are involved in the involuntary control of heart beat, digestion, etc. This particular type of nerve cell is also known to give rise to neuroblastomas, the most common tumors of childhood. Could the rampant cell growth in neuroblastoma, perhaps, be a result of the cell suicide program's failure to work when it should?

Although cell suicide has yet to be observed in other cell types, Martin and Johnson have reason to believe that the self-destruction found in particular neurons may be just the tip of the iceberg. Cell suicide may very well be a general biological occurrence. The death of individual cells, indeed, whole populations of cells is physiologically important and often necessary for the survival of whole, multicellular organisms. "Situations often occur during development and in adulthood, where the death of cells is normal and serves a useful purpose," Martin says. "Individual cells that are members of a multicellular organism must hold their interests subservient to the good of the organism as a whole. When death is the appropriate action, any given cell may be able to die cleanly and quickly by taking an active role in its own self-destruction."

Kao awarded for being outstanding professor in OB-GYN

Ming-Shian Kao, M.D., professor of obstetrics and gynecology at the School of Medicine, has been named by former residents as best teacher of obstetrics and gynecology for the years 1971-75. Kao's name was added to the Memorial Wall outside the Maternity Hospital building during ceremonies on Thursday, May 12. The dedication followed a lecture by Warren H. Pearse, M.D., executive director of the American College of Obstetricians and Gynecologists and Annual Visiting Distinguished Professor for 1988.

The Memorial Wall was established in 1971 to honor teachers considered by their students to most exemplify standards of excellence set by the St. Louis Maternity Hospital. Kao, the 15th teacher whose name has been added to the wall, was chosen for the honor from a list of 60 nominees by residents who were his students from 1971-75.

Kao has been previously elected as Teacher of the Year for 1976-77 and 1982-85 by Barnes Hospital residents in obstetrics and gynecology, and was given the First Annual Chief Residents' Award in 1985 by the same group.

Kao joined Washington University in 1971 as an instructor in obstetrics and gynecology after serving a four-year residency at Barnes Hospital. He was named professor in 1986. He is on staff at Barnes, Jewish, and Children's hospitals, sponsoring institutions of the Washington University Medical Center.

Before joining Washington University, Kao served an internship and a residency in general surgery at the National Taiwan University Hospital, and an internship at Methodist Hospital of Central Illinois in Peoria. He also served as a clinical fellow in gynecology at Queen's University in Kingston, Ontario.

Kao received his medical degree from the National Taiwan University Faculty of Medicine in 1961. He is a fellow of both the Royal College of Surgeons of Canada and the American College of Obstetricians and Gynecologists. His other professional memberships include the Society for Gynecologic Investigation and the Society of Gynecologic Oncologists. He has co-authored numerous papers on the subject of gynecologic oncology.
Cost savings incentive program to be launched

Free publications answer questions about variety of benefits

Free informational benefit publications are available to members of the Washington University community. The publications cover topics about health and life insurance, Social Security, retirement planning, mutual funds and annuities.

The TIAA-CREF publications that are available are “Some Thoughts About the CREF Transfer-to-TIAA Option,” “Allocating Premiums in the TIAA-CREF System,” “TIAA-Deferred Annuities Worksheet for Computing Your Maxi-
mum TDA Contribution,” “Retention Annuities 1986,” “Supplemental Reti-
rement Annuities 1987,” and “Your TIAA and CREF Annuities and the TIAA
Graded Benefit Payment Method.”


Primary areas of focus for resource conservation.

The members of the committee are: David Blasingame, associate vice
chancellor and director, alumni and development programs; A. Van L.
Brokaw, assistant vice provost for recruitment management; Patricia J.
Gasserly, associate controller; Karen Coburn, associate dean for student
development; Jerry M. Harmon, assistant director computer services business
affairs; Faith Maddy, associate director, residential life and chairperson-design
nate of the Nonacademic Personnel

Advisory Committee; Robert B.
Nicholson, mechanical engineer, campus power plant; Earl R. Stuck-
meyer, director, financial planning; Faculty of Arts and Sciences; M. Fredric
Vollmann, associate vice chancellor and director of public relations; and Gloria
White, associate vice chancellor for personnel and affirmative action, serving as chairperson of the committee.

The committee is in the planning stage and expects to launch its Cost
Savings Incentive Program no later than July 1. Participation will be open to
everyone with creative ideas.

Annual change in retirement annuity contributions

Participants under the retirement annuity may change their tax deferred contribution on July 1, 1988. Eligible non-participating employees may consider enrolling in the retirement annuity at this time.

The University retirement plan comes under the Internal Revenue Code, which limits the annual amount of your tax deferred contribution to up to $9,500 and the number of salary reduc-
tions agreements to one agreement per year.

Under tax reform, there is also a $30,000 annual limit on combined
employer/employee tax deferred and after tax contributions.

The minimum contribution to qualify for the University contribution under the basic plan is 5 percent. The percentage of University contribution is based on the participant’s age as of July 1 of each year.

If you desire to contribute a tax deferred amount in excess of the
general limits, it is necessary to have a calculation done by the Payroll Office.

Additional investment options to TIAA/CREF are available under the
Supplemental Retirement Plan through the Vanguard Group of Investment Com-
panies and TIAA/CREF. Enroll-
ments in Vanguard, including transfers to Vanguard, must be made effective on July 1 of each year, except for new employees.

All questions, change forms, applications and transfer forms should be
directed to the following people: on the Hilltop Campus, Bill Maurer (a-
ademic) and Sylvia Pedreiro (nonac-
ademic), 889-5990, Box 1184; on the Medical School Campus, Jane Schindler (academic and Mary Walsh (nonac-
ademic), 889-7191; Box 8100 and the Dental School, Carol Komor (academic and nonacademic), 454-0350, Box 8100.

Jobs open on campus

Washington University is conducting a search to fill the position of director of special projects in Special Development Programs on the Hilltop Campus. Detailed information about the qualifications and the application process is available from Sharon George in the Personnel Office at 889-5990. Application
deadline is May 20, 1988.

In addition to the professional
search, qualified candidates are being
sought to fill secretarial, clerical and

technical positions. Current staff open-

ings on the Hilltop Campus follow:

Administrative Assistant 2 positions
Athletic 1 position
Buyer 3 positions
Clerical 1 position
Coordinator 2 positions
Data Processing 1 position
Director 1 position
Programming 2 positions
Director/Assistant 6 positions
Director 3 positions
Elevator Operator/Junior 1 position
Head Resident 3 positions
Maintenance/Engineering 5 positions
Part time 3 positions
Registrar, Gallery of Art 1 position
Research, Biology 3 positions
Secretary/Word Processor 6 positions
Secretary 6 positions

Information about these and other positions is available through the Hilltop Campus Personnel Office, Room 126 of North Brookings Hall, 889-5990, and the Medical Campus Personnel Office, 4500 McKinley Ave., 862-7191.
**CALENDAR**

**TUESDAY, MAY 24**

**WEDNESDAY, MAY 25**

**THURSDAY, MAY 26**

**FRIDAY, MAY 27**

**Friday, June 3**
2 p.m., Dept. of Chemical Engineering Seminar, "Multiplicity, Stability and Operability of Tubular Reactors," Wei-Kang Yuan, chairman, Dept. of Chemical Engineering, East China U. of Chemical Technology in Shanghai, China. 100 Cupples II.

**MUSIC**

**Friday, May 20**
7:30 p.m., Music of the World Tour, Music Concert featuring Usman Khan and Hindiya Sisters, Holmes-Lounge, General admission is $10 for adults and $5 for children. WU faculty, staff and students free; and all other students, $5.

**EXHIBITIONS**


"The Core Exhibit." Named for classes that comprise the core requirements in the School of Fine Arts. The exhibit features the work of freshmen and sophomores. Through May 22.

"Bid Day Gallery, Baby B" Hall. 10 a.m.–4 p.m. weekdays.

"Highlights From the Philip Mills Arnold Set."

"Permanent Collection." May 19-June 4.

Michelangelo — continued from p. 1

Sistine ceiling's conservators, when they began the massive project in 1980, was how to ascend to the 65-foot-high ceiling to clean the 11,000-square-foot surface. It certainly must have puzzled Michelangelo when Pope Julius II commissioned him in 1558.

Knowing they could not close the chapel to the public for four years, the conservators decided to build an overhead scaffold that could be anchored at opposite walls.

When they began studying the walls, they discovered that's how Michelangelo did it," Wallace says. "They found the holes where he had anchored beams, and now they are reusing those holes. The beams support two perpendicular rails that run the length of the chapel. A truss bridge, the working platform, moves along the rails as work progresses.

The scaffold is perched at a height that is conducive to standing, not sitting. In a sonnet written to his friend Giovanni da Pistoia around 1510, the artist describes his painting position: "My beard toward Heaven, I feel the back of my brain Upon my neck, I grow the standing person."

At a scholarly level, he notes, "Michelangelo's first thoughts, like any Italian away from home, were directed toward his native city. In Florence he found the help he needed."

In May 1558, Michelangelo wrote to his boyfriend, Francesco Granacci, asking him to recruit some assistants and bring them immediately to Rome. The master had also hired some local assistants by the time Granacci arrived with five artists.

"It is likely that from the beginning Michelangelo intended to employ these five artists in a limited capacity, to instruct him in the technique and tricks of fresco painting."

The conservation that Michelangelo painted the ceiling alone was perpetuated by the artist's contemporary biographers. According to Wallace, biographer Giorgio Vasari "tells the anecdote that Michelangelo, growing impatient with the Florence artists' incompetence, locked himself in the chapel and refused to let them in. Thinking they were the butt of a tired, some joke, they returned to Florence in shame."

"Biographer Asciano Condovi picks up the thread at this point. Left to complete the ceiling, he writes, Michelangelo painted the whole in 20 months without any help whatever, not even someone to grind his colors."

Wallace argues that the biographers mixed their stories like the artist mixed his paints. "He was such a famous artist legends developed about him during his lifetime," Wallace says.

"British historian Heath Wilson, writing in 876, already doubted the early biographers who stated that Michelangelo worked without assistants, as have many writers since, Wallace says. In a chart that supplements his article, Wallace names 13 assistants. Two voluntarily departed early, three were probably dismissed, but the remainder probably stayed to assist Michelangelo.

Wallace says climbers the scaffolding has paid off. At a personal level, he was awed. "Up close, the paintings are absolutely gorgeous — a little bit overwhelming," he says. "Although the figures are seated, they are taller than a standing person."

At a scholarly level, he notes, "Examination of the ceiling from the scaffold clearly shows the presence of helping hands, especially painting in the architecture, decoration, and many of the secondary figures. Much of the architecture, for example, was a repetitious task that required competence but no imagination, and the presence of more than one hand is particularly evident when it is viewed at close range."

The renewed evidence of assistants only magnifies the genius of Michelangelo, Wallace concludes. The contribution of the assistants is more than ever apparent, but their presence in no way diminishes Michelangelo's accomplishment. Rather, it is to the credit of his genius that the final product is a unified work of art, both conceptually and stylistically.

But he won't be surprised if the myths continue. According to Wallace, "they are fictions that attempts to grasp a superhuman achievement."