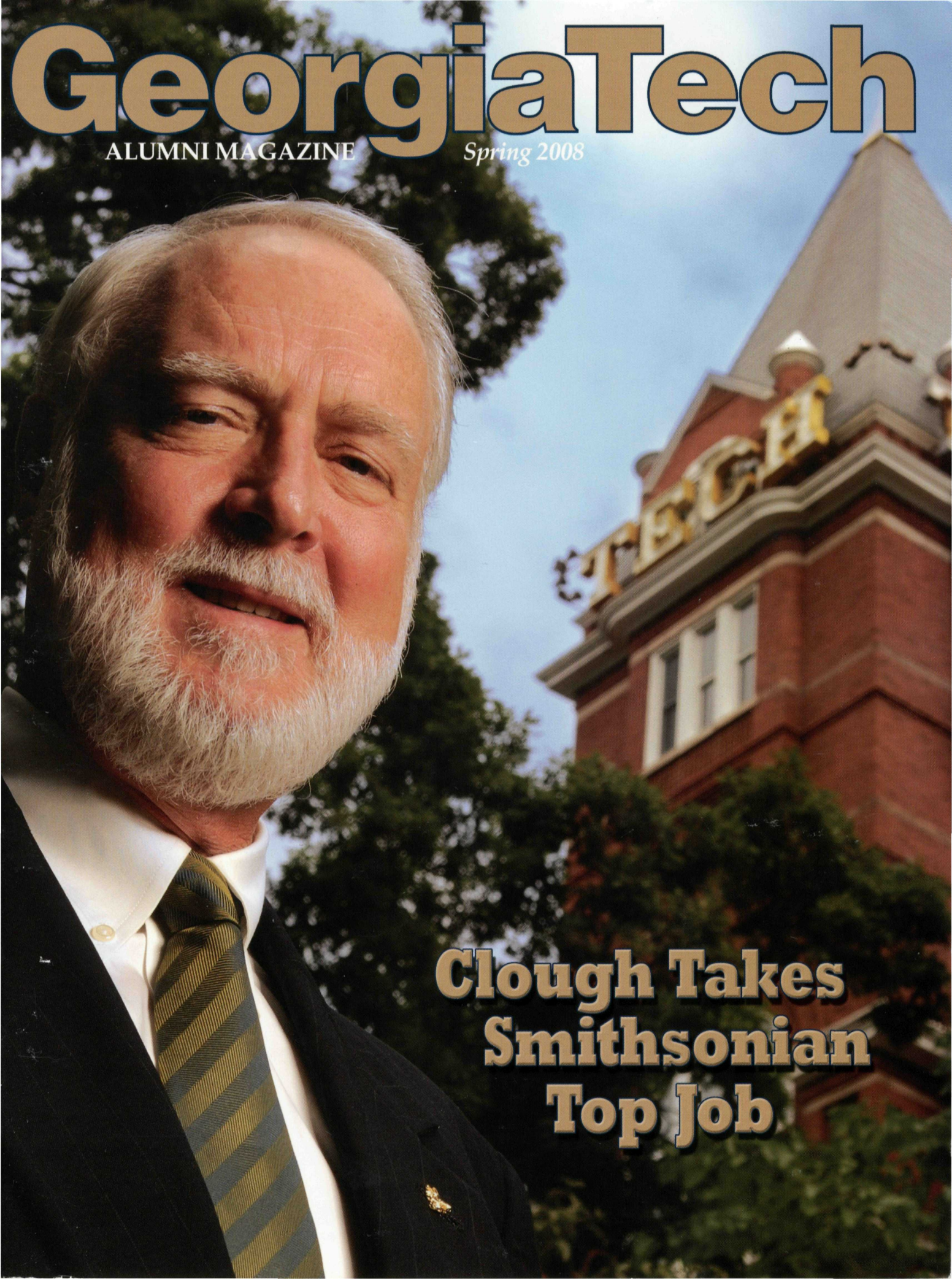
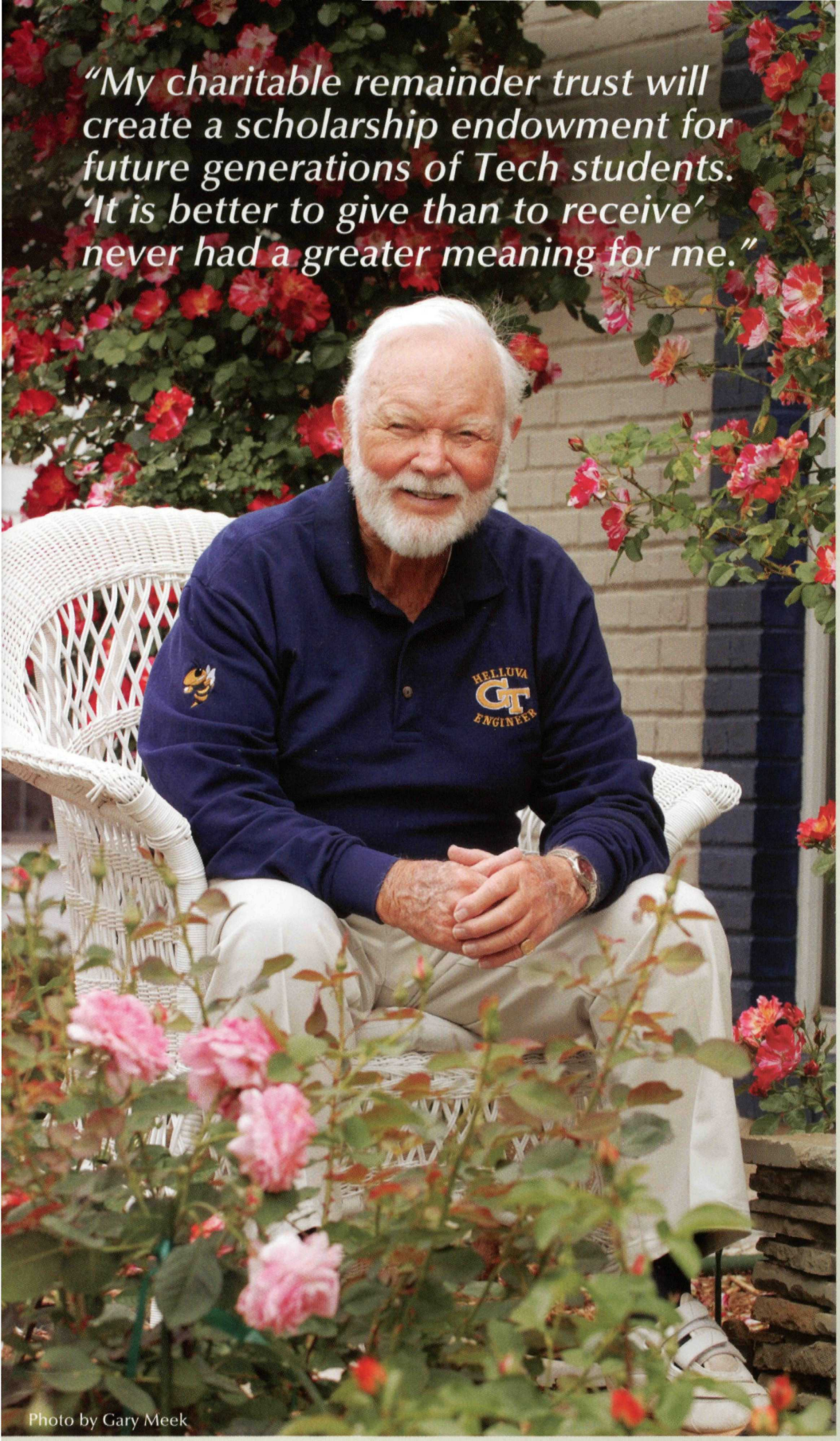
GeorgiaTech

ALUMNI MAGAZINE

Spring 2008



Clough Takes Smithsonian Top Job



Peter J. Van Norde
AE 1943
Duluth, Georgia

- First trip out of New Jersey was at age 17, aboard a train to enroll at Georgia Tech.
- Delta Sigma Phi member; cheerleading squad for three years.
- Joined the Navy in his senior year; served aboard Aircraft Carrier USS Suwannee in the Pacific.
- Engineer with Curtiss Wright Corp; worked on developing rocket engines, including those that powered the Bell XS-2.
- Attended law school at night; law practice in New Jersey for 45 years.
- Served on the campaign committee for the Guggenheim School of Aerospace Engineering.
- Hobbies have included: flying his aircraft throughout the United States, Mexico, Canada, and the Caribbean; skiing in Europe, the Rocky and Sierra Nevada Mountains, and Lake Tahoe; heli-skiing in the Monashee Mountains in Canada; and golfing. Former president of Upper Montclair Country Club in Clifton, New Jersey.
- Horticulture is current passion; his garden with 250 roses has been on many tours and featured in numerous publications.

Gifts to Georgia Tech
- Charitable remainder unitrust to establish the Peter J. Van Norde Scholarship Endowment for aerospace engineering students.
- Endowment to support the Yellow Jacket Flying Club; donated his 1960 Cessna 310 twin engine model D.
- Roll Call donor for 58 consecutive years.
- Supports the Alexander-Tharpe Fund.

Thoughts on giving to Tech
"The people of Georgia paid for my education since my out-of-state tuition at Georgia Tech was $120 per semester. I believe in 'pay back' and that time arrived in 1997 when I set up a charitable remainder trust, which will create a scholarship endowment for future generations of Tech students. 'It is better to give than to receive' never had a greater meaning for me."

Peter Van Norde is one of Founders' Council's 964 members who have made bequests or life-income gifts of at least $25,000 in support of Georgia Tech's future.

Georgia Tech Founders' Council

For more information on supporting Georgia Tech through a bequest or life-income gift, please contact:
Office of Development • Gift Planning • Atlanta GA 30332-0220 • 404.894.4678 • founderscouncil@dev.gatech.edu

GeorgiaTech Sp
Alumni Magazine Volume 84, Number 4

DEPARTMENTS

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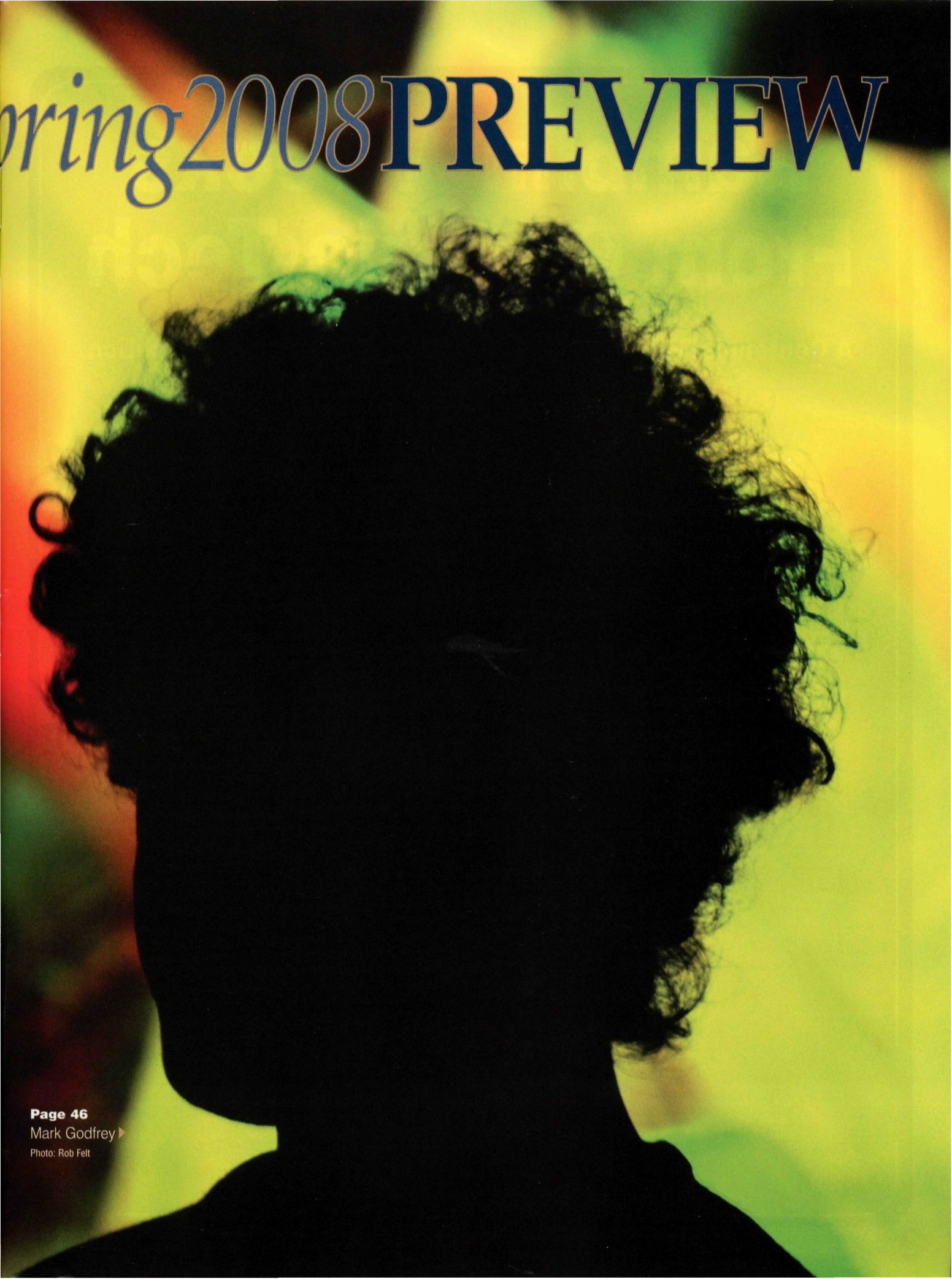

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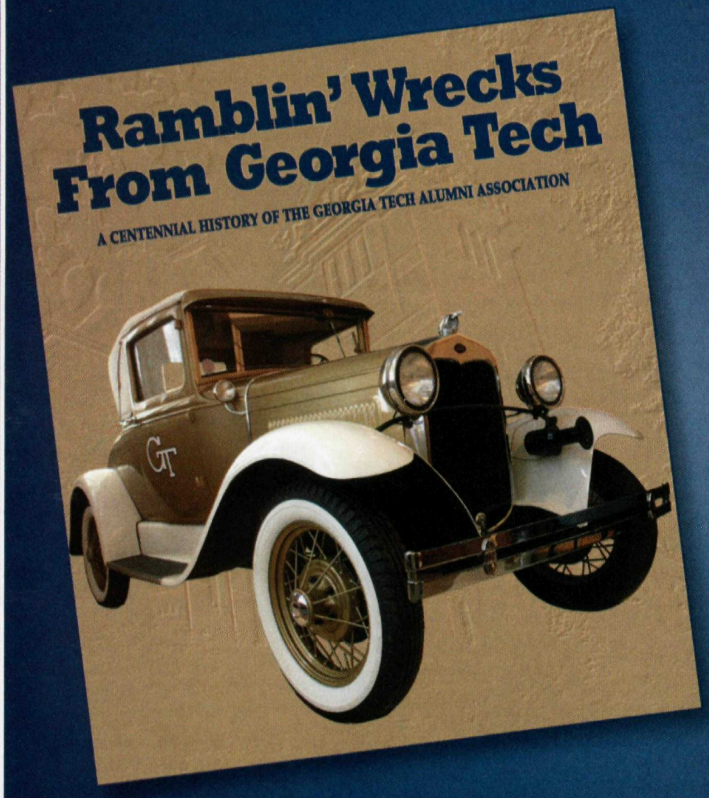
Mark Godfrey
Photo: Rob Felt

Ramblin' Wrecks From Georgia Tech

A Centennial History of the Georgia Tech Alumni Association



This fascinating book and DVD set marks the 100-year anniversary of your Georgia Tech Alumni Association and will make the perfect gift for any Georgia Tech graduate. The hardback book includes a foreword penned by Wayne Clough, president of the Georgia Institute of Technology, as well as a Photomosaic of the Ramblin' Wreck composed of 2,600 images of alumni, friends, leaders and legends of Ramblin' Wreck history. A 24-minute DVD, produced by our award-winning Living History Department, provides historic pictures, movie and news clips and colorful narration that complete the history of the Georgia Tech Alumni Association.

"Tech's celebration of the Association's centennial anniversary is a time for remembering the many wonderful highlights of the past and for using that past as a springboard to the incredible future opportunities that lie ahead."

— Georgia Tech President Wayne Clough

http://gtalumni.org/site/Page/Shop

Order the centennial history through the Alumni Association for $39.95, plus shipping and handling. For more information, call 1-800-GT-ALUMS.

Georgia Tech Alumni Association

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Georgia Tech Alumni Magazine
(ISSN: 1061-9747) is published quarterly (Summer, Fall, Winter and Spring) for contributors to the annual Roll Call of the Georgia Tech Alumni Association, 190 North Ave. NW, Atlanta, GA 30313. Georgia Tech Alumni Association allocates $10 from a contribution toward a year's subscription to its magazine. Periodical postage paid at Atlanta, GA and additional mailing offices.

Main Number (404) 894-2391.

Postmaster: Send address changes to Georgia Tech Alumni Magazine, 190 North Ave. NW, Atlanta, GA 30313. Editorial phone (404) 894-0750/0760. Fax (404) 385-4637. E-mail: editor@alumni.gatech.edu; gtalumni.org.

The Millennials Generation

What is the most important issue facing the country today? Most people would probably answer "the economy." And for good reason — everywhere we look, the economic news is bleak. The stock market is declining. Housing prices and new construction are falling. Jobs growth is weak (and that may be overstating the reality). Consumer spending, which accounts for 70 percent of gross domestic product, is declining. Interest rates are falling. The mortgage mess is spreading. We have inflation in energy costs, which drive other costs up too — notably food and transportation. It's not a pretty picture. And to top it all off, we have the medical community telling us that we're all obese. Man, things are bad!

Well, one of the things I've learned about our country is that we all believe that we can make things better. It might take a little time but we can overcome. My view is that by and large Americans are a positive lot. And I think that mentality is what sustains us through tumultuous times.

This new generation of students, the "millennials" as the marketing wonks like to call them, is a generation of believers too. Georgia Tech is focused on bringing the best out of this new generation by providing an educational and life experience par excellence. Oh yes, it's a long way from drownproofing and standing in line to register for classes but believe me, it is no less rigorous. In fact, it's probably harder intellectually today than it ever was before.

But these kids are smarter and more focused too — including my own two millennials. All of which is good reason for you to continue to support the mission of Georgia Tech. As alumni, we enjoy the benefit of Tech's great reputation today even though the school is a far better institution now than when we matriculated here.

Joseph P. Irwin, President

~ SAVE THE DATE ~

Georgia Tech Alumni Association

100

A CENTURY OF IMPACT

09.04 TO 09.07

BOSTON COLLEGE TRIP

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10.03 TO 10.04

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10.18

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10.23 TO 10.25

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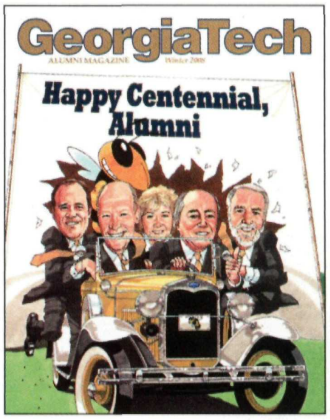

Movie Melody

In the Winter 2008 issue of the ALUMNI MAGAZINE, the article "The Engineering of a Song" mentions that Gregory Peck sang the Ramblin' Wreck fight song in the movie "The Man in the Gray Flannel Suit."

I was floored recently when I was watching the movie "The High and the Mighty" starring John Wayne. He plays a washed-up airline pilot called Whistlin' Dan because he whistles wherever he goes. Most of the time Whistlin' Dan whistles the theme song of the movie, but during one high-tension scene in which the plane is facing certain doom, Robert Stack, who plays the pilot to John Wayne's co-pilot, says, "Whistle me up a tune, Dan. I like music while I work."

John Wayne puckers up and starts whistling "Ramblin' Wreck." Needless to say, the plane lands safely.

Bill Naivar
Video Manager
Office of Information Technology
Georgia Tech

Behind the Scenes

Among the various endeavors you have accomplished, one of the most impressive to me is the "Centennial History of the Georgia Tech Alumni Association." I made an early purchase of it and have enjoyed reading and rereading many of the passages.

A particular item of history with which I was personally involved had to do with the origin of DramaTech in 1947, recounted in the book. I was one of the founding group some 61 years ago.

I came to Tech in the fall of 1941. During my freshman year, I was recruited for a play in downtown Atlanta — a commercial production of Cole Porter's "Anything Goes." I was an extra.

When the war came along, I volunteered so I could choose my field of service. After the war, I returned to Tech, and in the spring of 1947, I was living in Tech's YMCA over the stage. I lived there two years. I was one of a few people who got together to form a dramatic club. We saw the club become DramaTech.

I graduated from Tech in 1949 — although I didn't get my degree until 1954, but that's another story — and married Margaret Willingham, who graduated from Agnes Scott. I went into the packaging business and we moved to Charlotte, N.C. We became affiliated with the community theater and I became its president. I never took to acting. After my freshman experience, I never acted on stage again. I was always involved behind the scenes.

Harlow Lichtwardt, IE 54
Palmetto, Ga.

We Welcome Mail

The ALUMNI MAGAZINE welcomes letters. Please include your full name, address and telephone number. Letters may be edited for clarity, space and content.

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Atlanta, GA 30313
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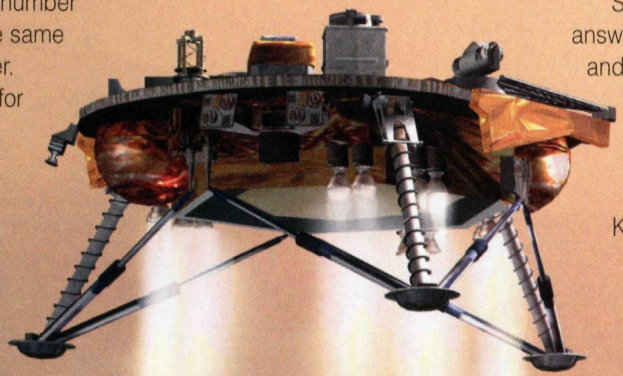
editor@alumni.gatech.edu

Why Not Go to Mars?

Why go to Mars? The question was posed in a letter in the Winter 2008 issue of the ALUMNI MAGAZINE. During my 25 years with NASA I was asked that question a number of times by people who wanted the same dollars and cents type of an answer.

For a while I gave the "benefit for all mankind, only 1.5 cents of your tax dollar, spin-offs, technology transfer, more jobs, new frontiers, national pride" to many an unimpressed ear. I finally realized that there is only one answer I can give to the question of why go to Mars (or to the moon or the planets or into space): If you have to ask that question, there is no answer I can give that will satisfy you.



Sorry, but there are no concrete answers to exploration, only challenges, and why humans go where they haven't been cannot be laid out on a spreadsheet.

Why go to Mars? Why the hell not?

Ed Rainey, CerE 60
Kingwood, Texas

Photo: NASA

"

John has cheated death again.

— Orson Swindle, IM 59

who for two years shared a North Vietnamese prisoner of war cell with John McCain, after polls showed the Arizona senator and presidential candidate would win the New Hampshire primary, in *The Wall Street Journal*

"

It's a place for biologists, chemists, engineers and architects to learn to talk to one another — and they normally don't.

— Jeannette Yen

director of the Center for Biologically Inspired Design at Georgia Tech, about the interdisciplinary process of biomimicry, designing products that imitate nature, in *The Wall Street Journal*

"

It was ridiculous! I'm not really sure how he got our shirts, but we're not complaining.

— Daniel Barbalho, ID 03

co-owner of Esperanza Clothing Co., on "American Idol" contestant Michael Johns wearing the Atlanta-based firm's T-shirts on the show and the ensuing spike in visits to its Web site, in the *Atlanta Journal-Constitution*

"

It's very, very hard to make games in the best of circumstances, and a university is never the best of circumstances.

— Ian Bogost

a video game researcher and designer and assistant professor at Georgia Tech, in *Technology Review*

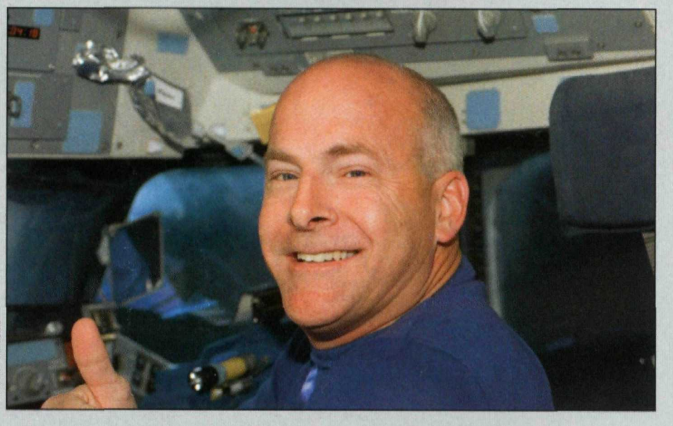
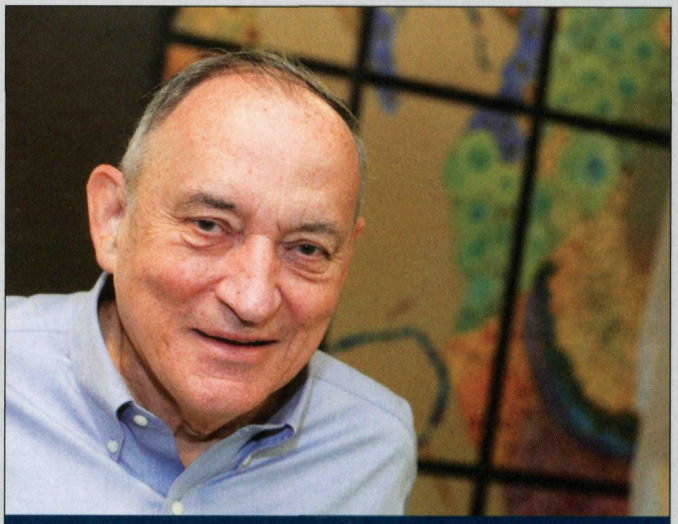


Photo: NASA

Really, honestly, this is one of the few jobs I've ever had where it's an absolute joy to wake up in the morning and come back to work.

— Alan Poindexter, AE 86

co-pilot of Atlantis, which carried a seven-member crew into space in February for an 11-day mission, on NASA.gov



Long term, a transplant of the heart is not necessarily going to be the preferred therapy. I think there may be more interest in repair of the heart.

— Robert Nerem

director of Tech's bioengineering institute, on researchers growing a beating rat's heart, in the Minneapolis *Star Tribune*

"

Animals teach us how to connect on a basic level and reconnect with ourselves.

— Megan Blake, Psy 81

a contributing writer, cohost and producer of "Animal Attractions TV," a PBS show renewed for a second season, in *Atlanta* magazine

"

They say be careful what you ask for.

— Bucky Johnson

retired Georgia Tech band director, at the swearing-in ceremony as the newly elected mayor of Norcross, Ga., in the *Atlanta Journal-Constitution*

It's like plucking a string, and the sound can tell you about the elastic properties of the muscle.

— Karim Sabra

an assistant professor in mechanical engineering who measures the sound of healthy muscles to create baseline information that could be used to diagnose muscular disease or injuries, on americanscientist.org

"

This is geek chic. Our students are getting sexy jobs. Computer science is the new sexy.

— Giselle Martin

who directs student recruitment for the College of Computing, on insidehighered.com

Virtual worlds are still in the very early stages. We are where MP3s were seven years ago. Our goal is to combine the virtual world with social networking and video gaming.

— Christopher Klaus, CIS 96
founder of Internet Security Systems and creator of Kaneva, a three-dimensional virtual world, in *Forbes*

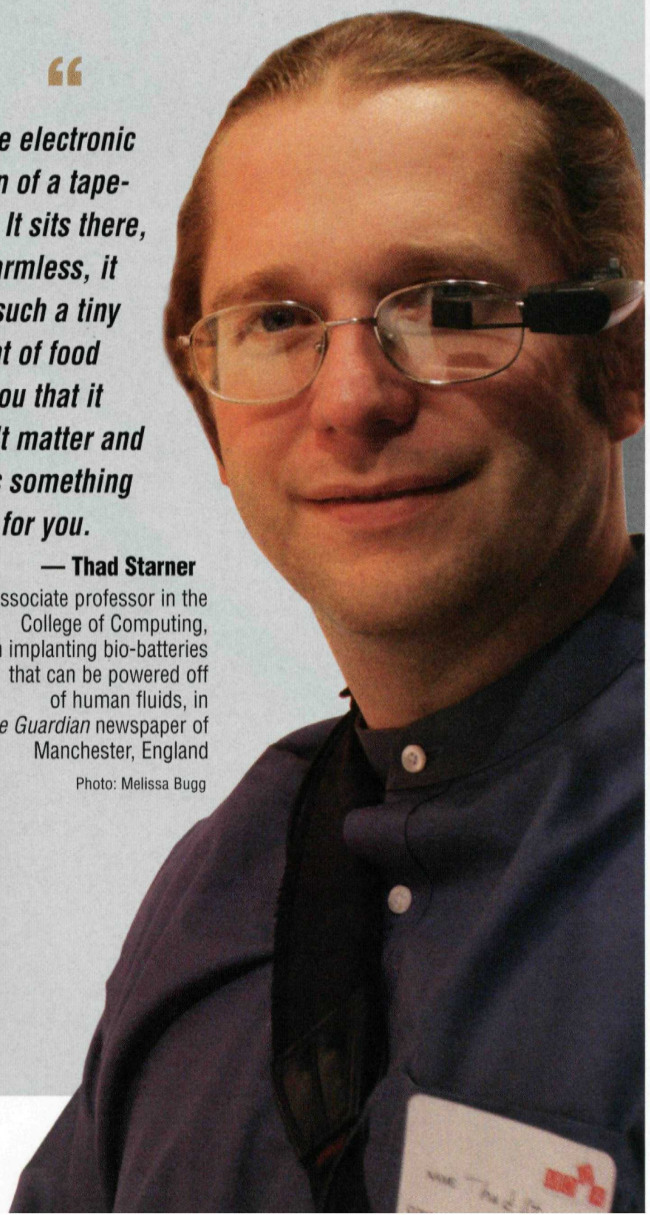
[Wayne Clough] is the best communicator I've ever met. He knows his audience. He speaks directly to that person. Never over their heads. Never below.

— Bill Todd, IM 71
president of the Georgia Cancer Coalition and chair-elect of the Georgia Tech Alumni Association, in the *Atlanta Business Chronicle*

It is the electronic version of a tapeworm. It sits there, it is harmless, it takes such a tiny amount of food from you that it doesn't matter and it does something useful for you.

— Thad Starner
associate professor in the College of Computing, on implanting bio-batteries that can be powered off of human fluids, in *The Guardian* newspaper of Manchester, England

Photo: Melissa Bugg

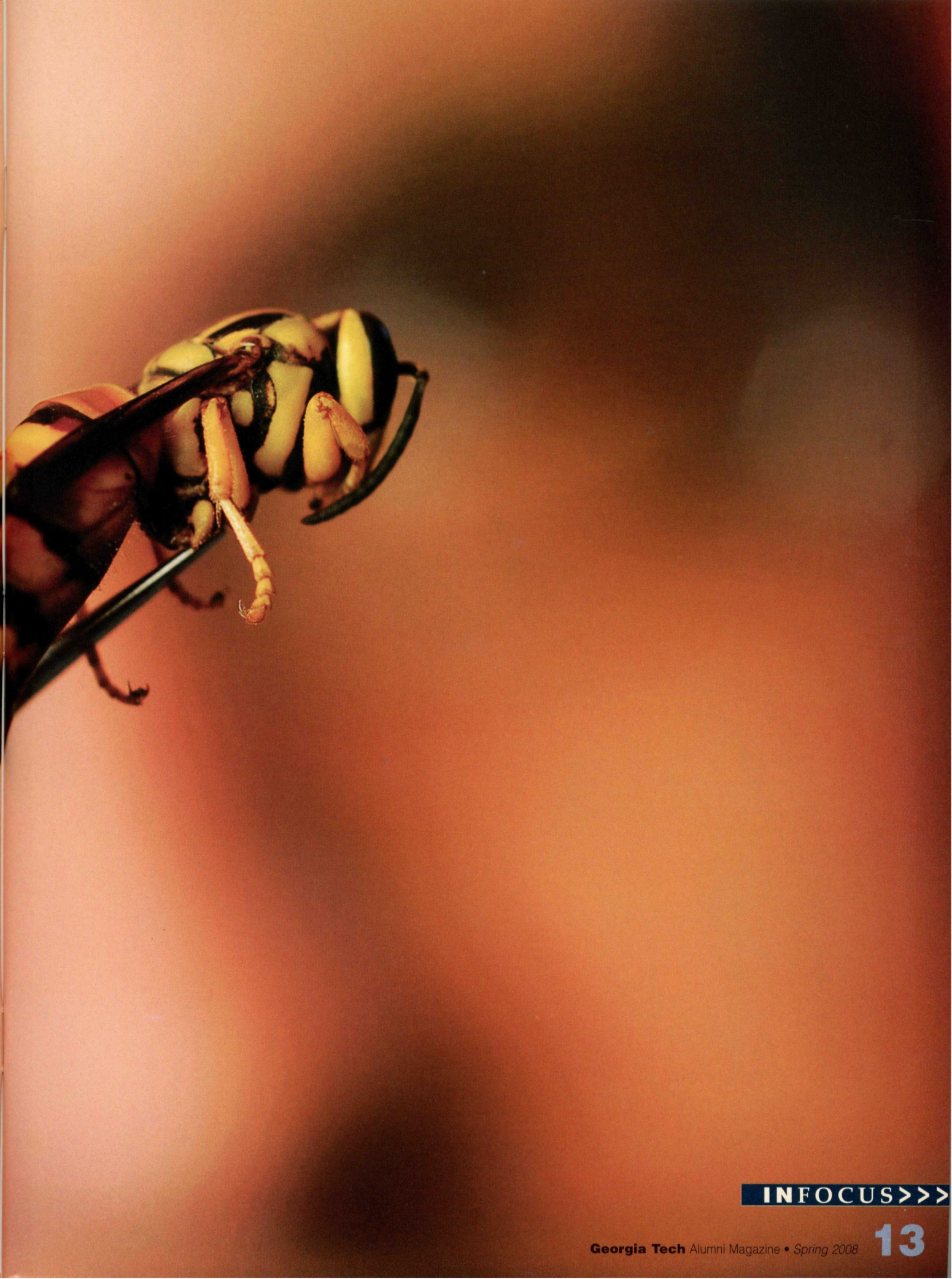


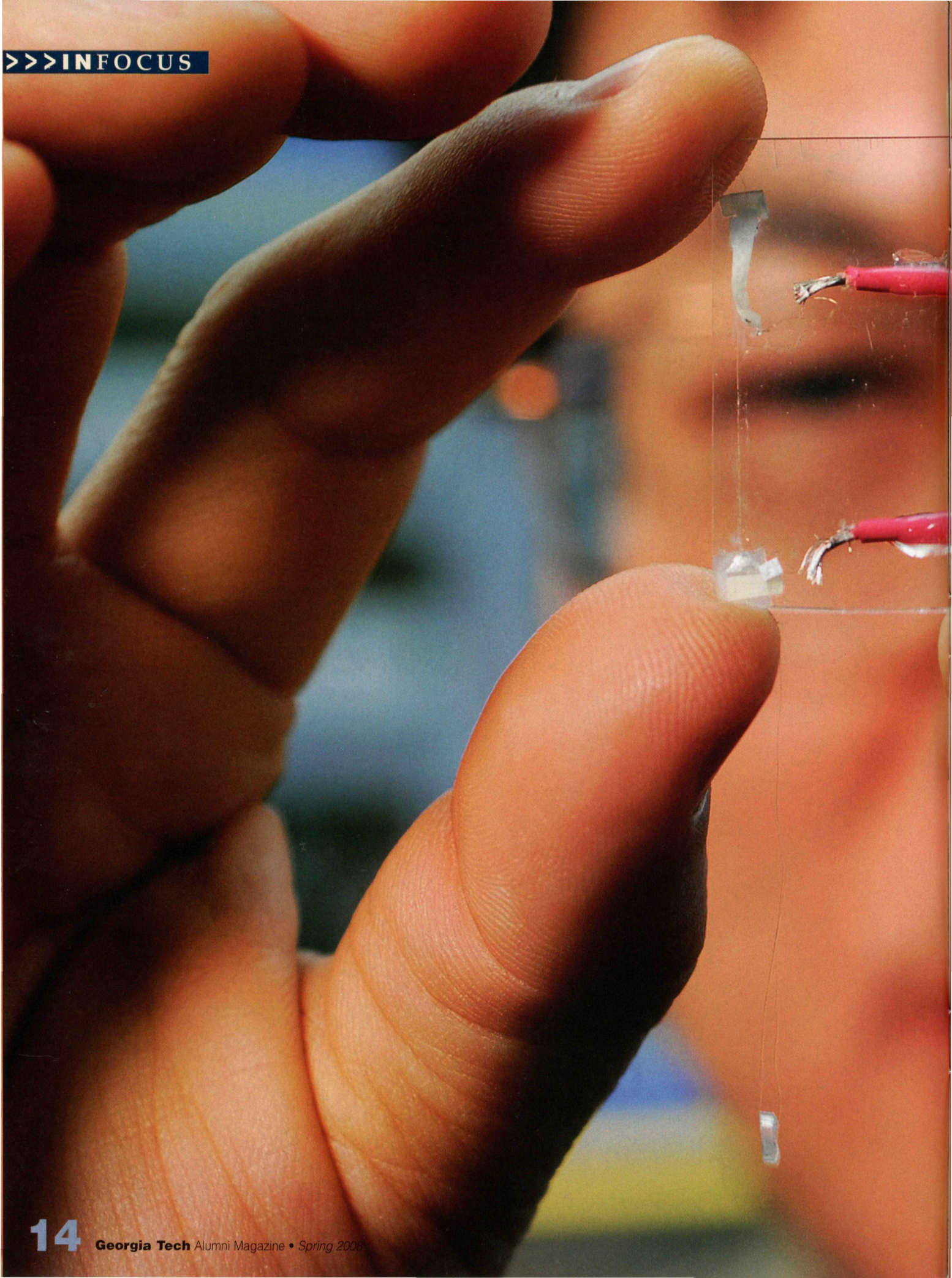
Family Dynamics of Yellow Jackets

"Social insects such as yellow jackets have been described as one of the greatest achievements of evolution because of the incredible cooperative nature of their societies," says Michael Goodisman, an assistant professor in the School of Biology who studies family dynamics within a colony. "I wanted to know why the females would risk this cooperative nature by having multiple partners" and if there would be fighting between subfamilies. "Weird things can start happening within families." Goodisman wondered if yellow jacket workers would kill new queens that had a different father or if they were more likely to turn their sister larvae into reproducing queens instead of sterile workers. The results from DNA fingerprinting showed that males fathered an equal number of queens and workers, leading Goodisman to believe there is no conflict within a colony because of multiple mating. He also found that a benefit to the colony for each queen having multiple partners is that it is more successful. Another avenue of Goodisman's research is to investigate how yellow jacket development leads to a caste system with queens, males and workers — each with a different role in the colony.

"The division of labor has made these animals so incredibly successful in cooperative behaviors, but workers and queens are genetically the same," says Goodisman, who found that certain genes are turned on or off to create the different castes. He also is intrigued by decision making within a colony. "We want to know who's telling the workers to stop making more workers and start making queens, so we're studying the life cycle of yellow jacket colonies. Is it an environmental cue or possibly a cue from the queen?" >>>

Photo: Gary Meek





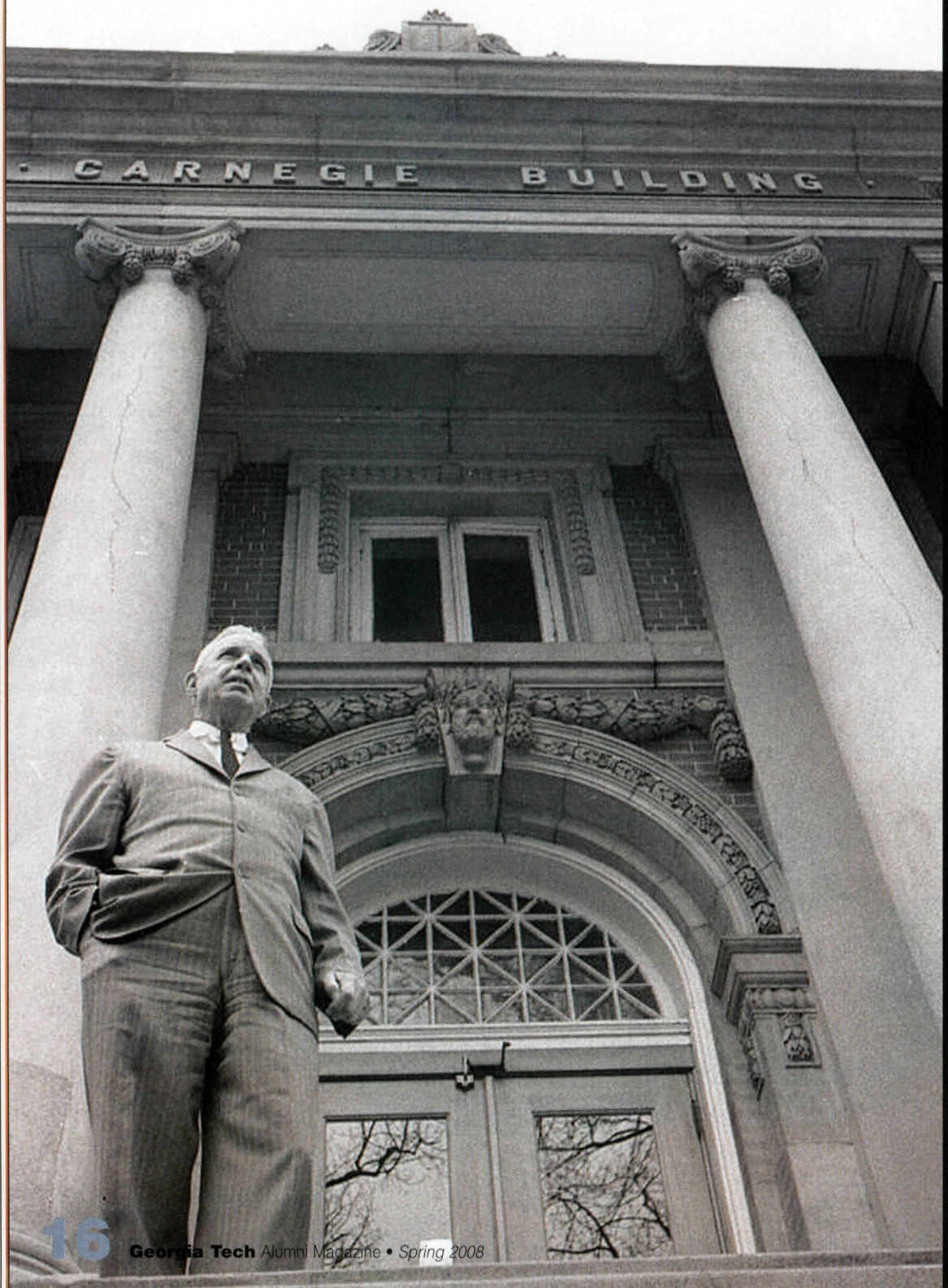
'Power Shirt' Could Generate Electricity

Nanotechnology researchers are developing the perfect complement to the power tie — a "power shirt" able to generate electricity for small electronic devices for soldiers in the field, hikers and others whose physical motion could be harnessed and converted into energy. Pairs of textile fibers covered with zinc oxide nanowires can generate electrical current using the piezoelectric effect. Combining current flow from many fiber pairs woven into a shirt or jacket could allow the wearer's body movement to power a range of portable electronic devices. The fibers also could be woven into curtains, tents or other structures to capture energy from wind motion, sound vibration or other mechanical energy. "The fiber-based nanogenerator would be a simple and economical way to harvest energy from physical movement," says Zhong Lin Wang, a Regents professor in the School of Materials Science and Engineering. "If we can combine many of these fibers in double or triple layers in clothing, we could provide a flexible, foldable and wearable power source that, for example, would allow people to generate their own electrical current while walking." With improved design, Wang estimates that a square meter of fabric made from the special fibers could theoretically generate as much as 80 milliwatts of power. However, one significant challenge lies ahead for the power shirt — washing it. Zinc oxide is sensitive to moisture, so in real shirts or jackets, the nanowires would have to be protected from the effects of the washing machine. — *By John Toon*

Photo: Gary Meek

Memories in Black and White

By Kimberly Link-Wills



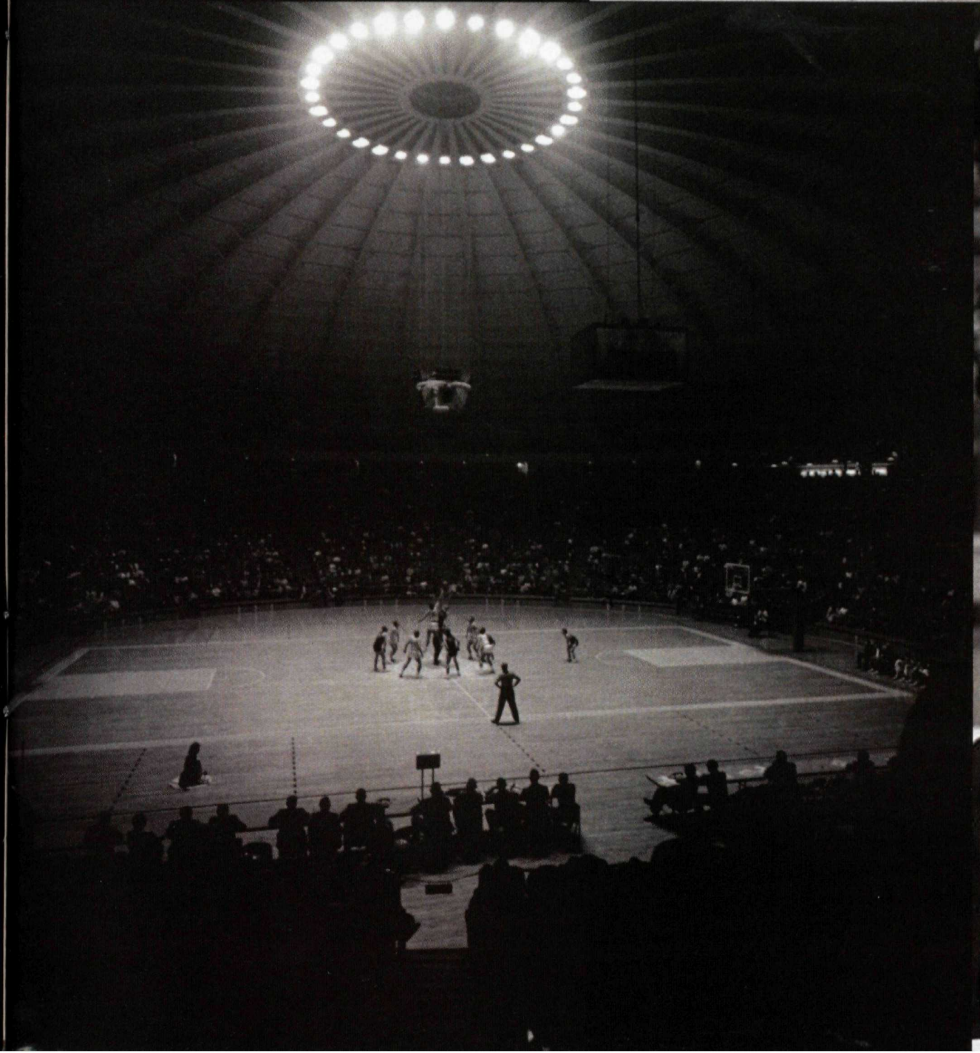
Bob Bland witnessed life at Tech through a viewfinder. Since 1961, the year he graduated with an industrial management degree, Bland has kept the hundreds of contact sheets and negatives from his days as a student photographer neatly stacked in boxes in a storage unit.

Back in those days, Bland would take pictures of campus scenes, then show the contact sheets to Bob Wallace, editor of the *Georgia Tech Alumnus* and adviser to student publications. Wallace would pay $2 for each shot he liked. Bland would head to a darkroom on campus to produce the selected prints.

Wallace and the *Alumnus* are gone, as are most darkrooms. The ALUMNI MAGAZINE staff recently sat down with Bland, dusted off the loops used before the digital age and selected some photographs to share in the publication. This time Bland went home, scanned the negatives and downloaded digital images onto a CD.

Things also have changed on the Georgia Tech campus. Bland, who took photographs for the *Alumnus, Blueprint, Technique* and *Rambler* throughout his student career, enjoyed documenting the organized chaos that was registration.

"You drew a card with your registration time. They wouldn't let you in before that time. You went into the gym. At the back was a large board that was only used for registration. You had to check what was available on the board. If a class was >>>




'36
'41
31 – EE

on the board, it was closed out. When you finally thought you had one, you'd run down to one of the tables and have somebody approve it," Bland says. "That was registration back then. It was totally different. The students today wouldn't understand it."

He also spent a lot of time in the library — not necessarily studying. "Let's not go there," Bland says. "I got out with a two-point something. I didn't do that much studying."

Evident from Bland's contact sheets, he also spent a considerable amount of time photographing *Blueprint* "beauties." But he's quick to point out photos of campus construction, football games and fraternity and YMCA dances. "We shot a little of everything," he says.

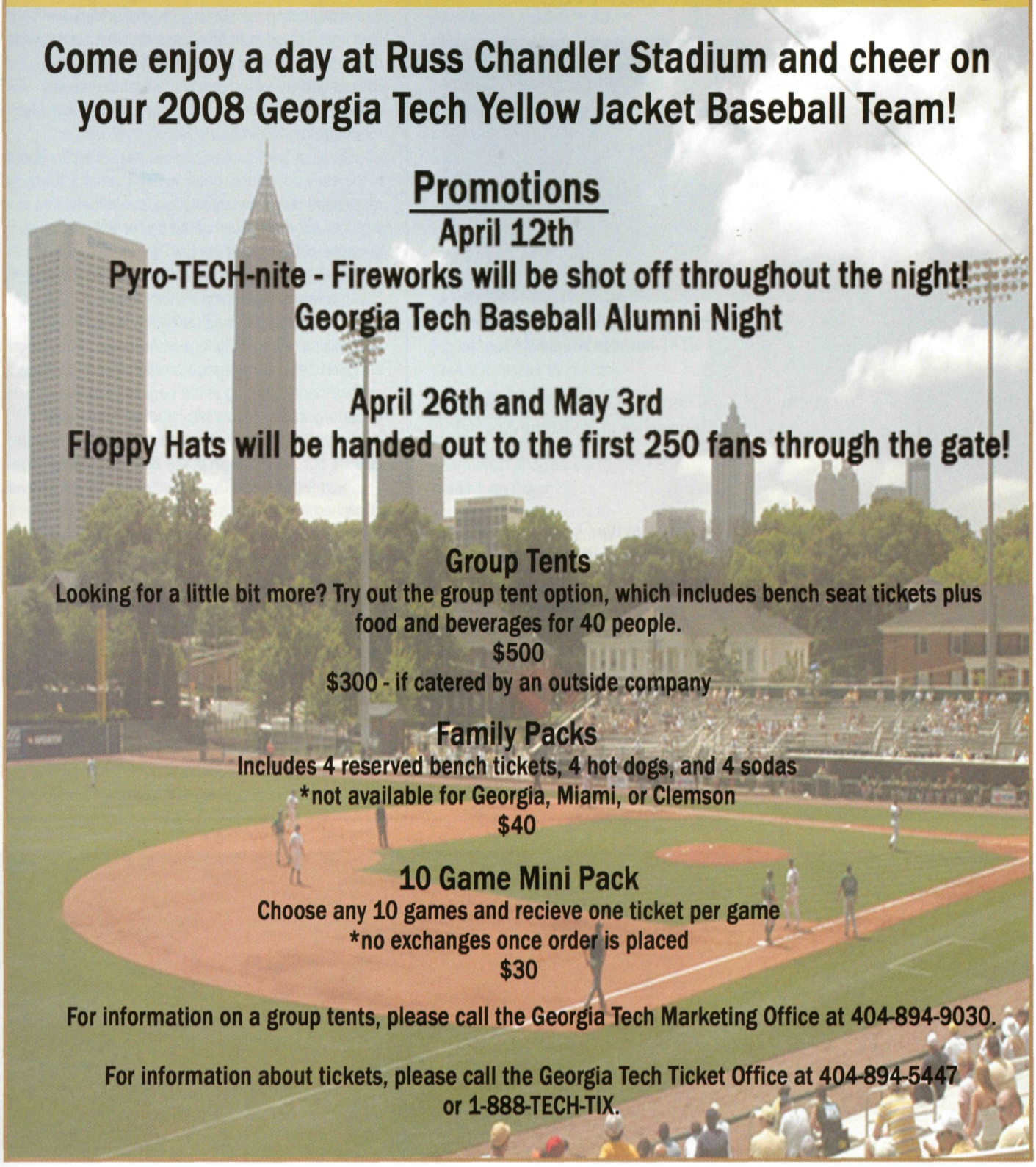
Working for Wallace also brought Bland into contact with freelance photographer Bill Diehl, who took many pictures for the *Georgia Tech Alumnus* before focusing on the printed word and writing such novels as "Sharky's Machine."

Before he was called up in 1962 for what would become more than a decade of military duty, Bland worked for Diehl. "Bill Diehl had started a little processing lab. There was nothing for a professional photographer. We processed film for anybody who wanted to pay the price. We did a lot for Coca-Cola and other major companies," Bland says.

Once his military service began, Bland's days as a published photographer ended. He never saw Wallace or Diehl again. During a recent visit to campus, Bland carried a 35-millimeter camera with him. He thought he'd take a stroll, maybe take a few pictures. GT

As a student, Bob Bland chronicled life on the Tech campus.

Georgia Tech Baseball 2008



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Georgia Tech Baseball Alumni Night

April 26th and May 3rd

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Includes 4 reserved bench tickets, 4 hot dogs, and 4 sodas
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*no exchanges once order is placed
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For information on a group tents, please call the Georgia Tech Marketing Office at 404-894-9030.

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TECHNOTES

Huntsville Lab's 30 Years of Service

Photo: Gary Meek

Georgia Tech President Wayne Clough, left, and Stephen Cross, right, present a GTRI award to William McCorkle.

"Our Huntsville Research Laboratory ... has delivered outstanding technical assistance and real innovation on a consistent basis."

— Stephen Cross
GTRI director

Thirty years ago in February, Georgia Tech research faculty established a presence at Redstone Arsenal in Huntsville, Ala., to support U.S. Army missile technology.

It was a good move.

Since its start as "Huntsville Operations," the laboratory's impact has grown into a variety of defense fields. Its key location has helped enhance communication between its parent organization, the Georgia Tech Research Institute, and its military stakeholders.

"Our Huntsville Research Laboratory is an extremely important part of our overall strategy," says Stephen E. Cross, GTRI's director and a Georgia Tech vice president. "It has delivered outstanding technical assistance and real innovation on a consistent basis." >>>

The Word on Foreclosures

Housing expert defines mortgage crisis

By Kimberly Link-Wills

When dissecting the national foreclosure epidemic, Dan Immergluck frequently uses the Word of the Year, determined by ballot in January by the American Dialect Society, which defines "subprime" as an adjective that describes a risky or less-than-ideal loan, mortgage or investment.

"Lots of folks think subprime loans were invented in the early part of this decade. They weren't. They really started in substantial scale, these loans that are high risk either because of the borrower's credit or because of features of the loan, in the early to mid-'90s," says Immergluck, a Tech associate professor in city and regional planning.

"This first boom was really only about refinance," he explains during a College of Architecture research forum on the U.S. mortgage crisis in March. "In the second boom, starting at the beginning of this decade, you saw a very big increase again in refinance lending but also a very big increase — just as steep if not steeper — in home purchase loans."

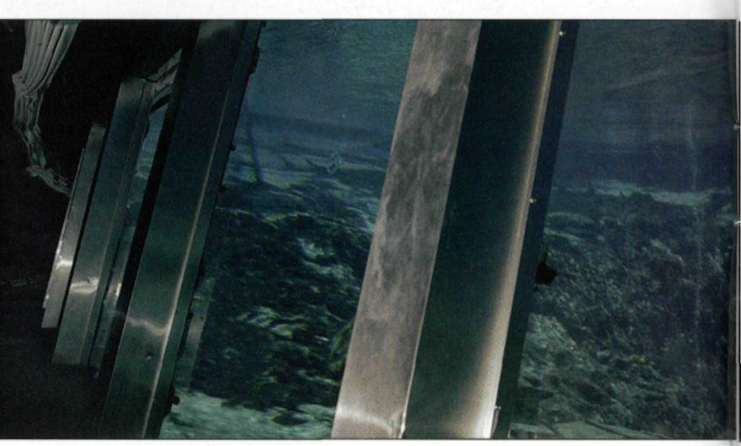
Immergluck, frequently quoted in the media, has published in such journals as *Urban Affairs Review* and *Housing Policy Debate* and is the author of the book "Credit to the Community: Community Reinvestment and Fair Lending Policy in the U.S."

In the five-county metropolitan Atlanta area in 2007, there were some 60,000 foreclosure filings — four times more than in 2000, Immergluck says. Georgia is in the top quarter nationally in foreclosures; California had the highest number of foreclosure filings in the nation last year. Other states harder hit than Georgia include Nevada, Michigan and Florida.

"Are foreclosures going to continue to rise? It doesn't really matter. They're at such high levels

Through the Lens of a Tourist

Ruth Dusseault, a visiting assistant professor in the College of Architecture, received a grant from the National Endowment for the Arts to photograph tourist attractions based on nature. The "Landscape of Tourism" collection includes photographs of Weekie Wachee Springs, where mermaids have performed underwater for decades. Dusseault focused on older attractions in Florida that "seized upon the region's unique topography." Other tourist attractions Dusseault photographed include Cypress Gardens, Homossassa Springs and Marineland.



they're pumping lots of housing supply into the market. Every time there's a foreclosure, they're basically taking a homeowner out of the housing market. Those folks are not going to own a home for at least five years," he says.

The New York Times reported that in January alone, 153,745 initial foreclosure notices were sent out across the United States.

"A lot of this was driven by a frenzied housing market. 'I've got to get a loan as big as I can as fast as I can.' If you want that, you go to a subprime lender. They're faster, they'll give you a bigger loan even though it's a higher interest rate," says Immergluck. "The other group is folks that just made bad decisions or got sold on a loan by aggressive sales tactics. Seventy to 80 percent of these loans are made by mortgage brokers."

Subprime loans may include "exploding" adjustable rate mortgages, zero down payments or no income documentation. A "piggyback mortgage" consists of the borrower taking out a loan for 80 percent of the home purchase price and another for 20 percent to cover the down payment.

Immergluck told a congressional subcommittee in March 2007 that subprime lending grew from about $35 billion in 1994 to $665 billion in 2005.

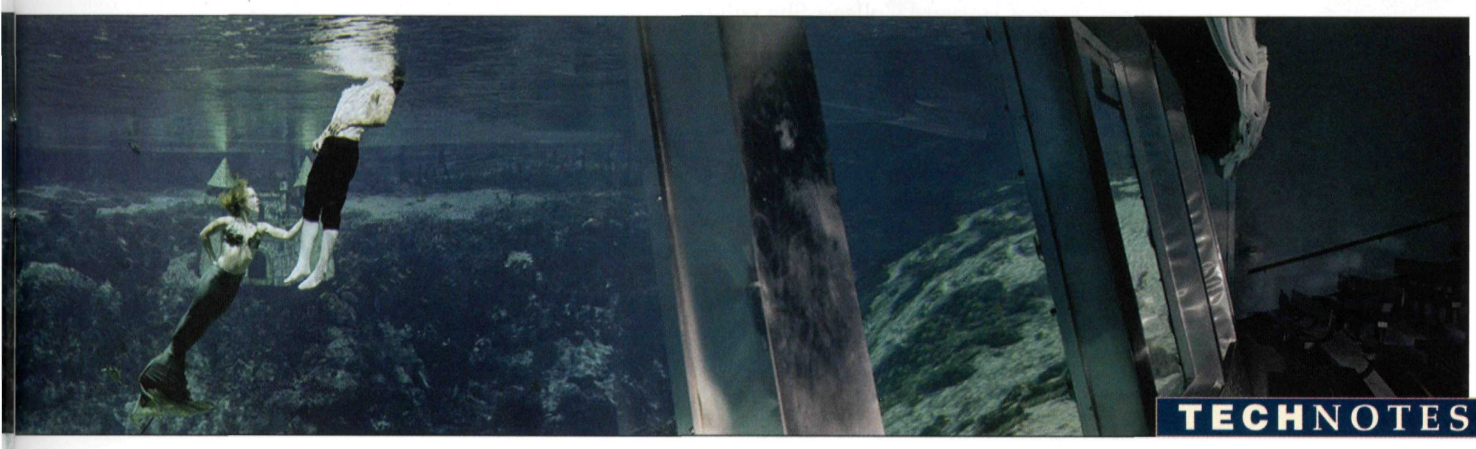
"A lot of loans are going into foreclosure in 12 months or less," he says. "Georgia has a foreclosure process that's a little over a month, and that's way too fast. Ohio has a foreclosure process that can take two years, and that's way too slow. It needs to be in between."

Concerning a charge that former Federal Reserve chief Alan Greenspan "was asleep at the wheel," Immergluck says, "He wasn't asleep at the wheel. He drove the car off the cliff. ... Industry resisted heavily any kind of attempts at regulation. The way we regulate mortgages now is I give you a stack of papers ... and anything in there you're responsible for, and if you sign it, that's your problem."

He told Congress there is "an urgent need for making all actors in the credit supply chain more accountable for their roles in the mortgage process. Liability for reckless lending needs to follow the loan from broker to lender to investor. Investors should not be able to hide behind a veil of ignorance. Nothing will create accurate information and reduce fraud better than exposing investors to the downside risk of providing capital to irresponsible lenders."

Mortgages should "once again be based fundamentally on an ability-to-pay rationale," he says. "I do think we need to go back to the plain vanilla, 30-year fixed-rate loan."

Photo: Stanley Leary



"What we are celebrating today is Dr. McCorkle's bold solution — to bring Georgia Tech to Huntsville and establish the permanent presence of GTRI engineers at Redstone Arsenal."

The research lab celebrated its milestone anniversary at a Feb. 26 Huntsville event that drew some 200 attendees, including Georgia Tech officials, researchers and alumni and representatives from the military.

President Wayne Clough presented a GTRI award to William McCorkle, executive director of the Army Aviation and Missile Research, Development and Engineering Center and an early proponent of a permanent GTRI presence in Huntsville. McCorkle is the first recipient of the GTRI Award for Exceptional Innovation and Leadership.

"What we are celebrating today is Dr. McCorkle's bold solution — to bring Georgia Tech to Huntsville and establish the permanent presence of GTRI engineers at Redstone Arsenal," Clough said.

Today, HRL focuses on software engineering and system engineering for a variety of U.S. Department of Defense programs, says Barry Bullard, the lab's director since 1998.

HRL keeps busy with research that covers air defense systems modeling, software testing and evaluation, war-game simulations and analysis and weapons system modernization.

"In our 30 years here, we've had the opportunity to work with the Army on its missile defense mission as well as grow our sponsor relationships into other areas," says Bullard. "Our expansion into the aviation mission area and several forms of system engineering is keeping our staff of 33 very busy."

Alumna Named Harvard Dean

Georgia Tech alumna Evelynn Hammonds has been named dean of Harvard College. She will be the first female and the first African-American to serve as dean of the undergraduate college.

Hammonds, EE 76, currently Harvard's senior vice provost for faculty development and diversity and a professor of the history of science and of African and African-American studies, will assume the job June 1.

"I know that there are many challenges facing the college and I am ready to tackle them with my colleagues' help," she told the *Harvard University Gazette*. Harvard president Drew Faust called Hammonds a "strong institutional leader" and a >>>

Attention!

Affinity group steps up to honor Tech's military ties

By Karen Hill

An Alumni Association affinity group is pulling together Yellow Jackets who can make a bed so tight a quarter will bounce off the blanket.

The Georgia Tech Military Affinity Group came into existence just a year and a half ago and is designed to link people whose backgrounds include both Tech and the military. It includes veterans, active-duty military personnel, family members and civilians with connections — those who work for the Department of Defense for example.

The affinity group is sponsoring its first celebration of Armed Forces Day with a recognition event May 16, one day before the nationwide observance.

Air Force Reserve Capt. Marcus Smith, EE 98, the group's president, says he realized its potential a decade ago when he was a student and working with the student foundation.

"That's when I learned how the Georgia Tech Foundation worked, how the alumni database was used. It dawned on me that there was a pool of (military) expertise not being tapped, and it was people who probably did want to get pulled together," Smith says.

Smith says the group has three main goals: to build relationships between military-minded alums and students, with a focus on career advice for the latter; to raise money for room and board subsidies, stipends and scholarships; and to someday erect a museum chronicling the long and complex ties between Tech and the military. Army ROTC at Tech dates to 1917; Air Force ROTC at Tech can trace its roots to 1920, when it was one of the first six Army Air Service ROTC units established. The school also was one of the six original sites for Naval ROTC, beginning in 1926.

"Military history, whether you 'love' the military or not, is a part of Tech history," Smith says. "There are things to be sad about, lessons learned, lessons to be learned. If those are not captured, how can we learn?" Each unit based at Tech now has about 100 cadets or midshipmen, including some from other Atlanta-area colleges and universities who come to the Institute for their ROTC courses.

To date, the group has provided money for Air Force cadets to build a flight simulator and awarded $6,500 in scholarships. It has brought military and political notables to campus to speak. That amount also includes what is planned as an annual $2,500 leader-

Photo: Gary Meek

ship scholarship awarded in memory of Army Lt. Tyler Brown, Mgt 01, HTS 01, killed in the line of duty in Iraq in 2004.

Within military circles, the affinity group represents a new cooperation, according to Capt. Wayne Radloff, who leads the Naval ROTC at Tech. It's a spirit that began, he says, when all three ROTC groups moved into the O'Keefe building on campus.

"Because the military has downsized, we don't have large units anymore so we won't have as many alums going into the future. We're going to be doing a lot more together," Radloff says. "There's strength in working together."

Col. Sheri Andino, who commands the Air Force ROTC detachment based at Tech, says the affinity group might eventually help figure out how to increase financial subsidies available to ROTC students, putting them more in line with those awarded to students at Auburn, Clemson and Illinois Tech, to name a few schools with lively ROTC programs.

Retired Marine Maj. Gen. Larry Taylor, IM 62, is co-chair of the Military Affinity Group's board of advisers. He sees the group as a way to both help and honor students with an interest in the military.

"If you get a degree from Georgia Tech, you're going to get a nice job offer, almost guaranteed. Many of these kids, in spite of the fact that they don't have to do it, choose to go into the military," Taylor says. "There are still a lot of kids out there, with no specific military obligation, who go because they're patriots."

■ To learn more about the Military Affinity Group and Armed Forces Day events, visit www.gtmag.org.

"Military history, whether you 'love' the military or not, is a part of Tech history. There are things to be sad about, lessons learned, lessons to be learned. If those are not captured, how can we learn?"

— Marcus Smith

person "who cares profoundly about the educational experience of our students in all its dimensions."

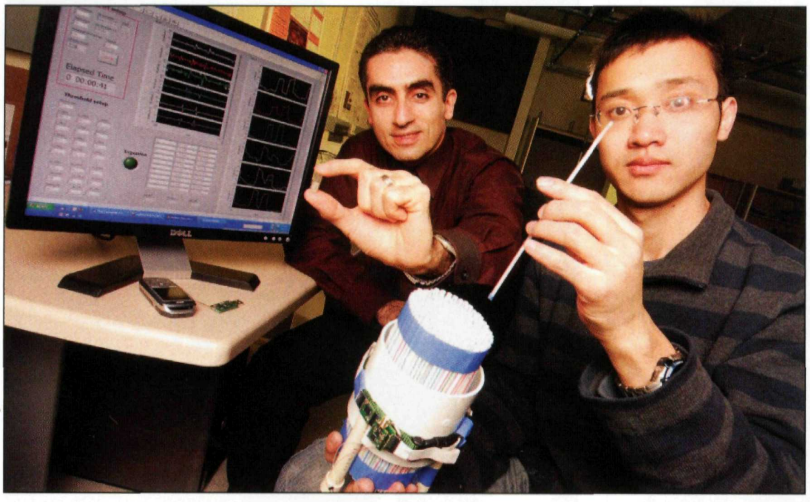
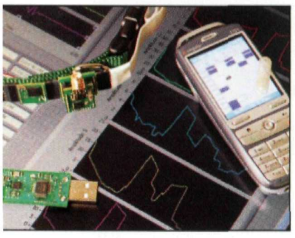


Photo: Gary Meek

Assistant professor Maysam Ghovanloo, left, and graduate student Xueliang Huo test their drug compliance monitoring system on an artificial neck. MagneTrace, below, sends the date and time a pill is swallowed to a wireless device. The sensor necklace aims to increase drug compliance among the elderly and others.



Sensor Necklace Remembers

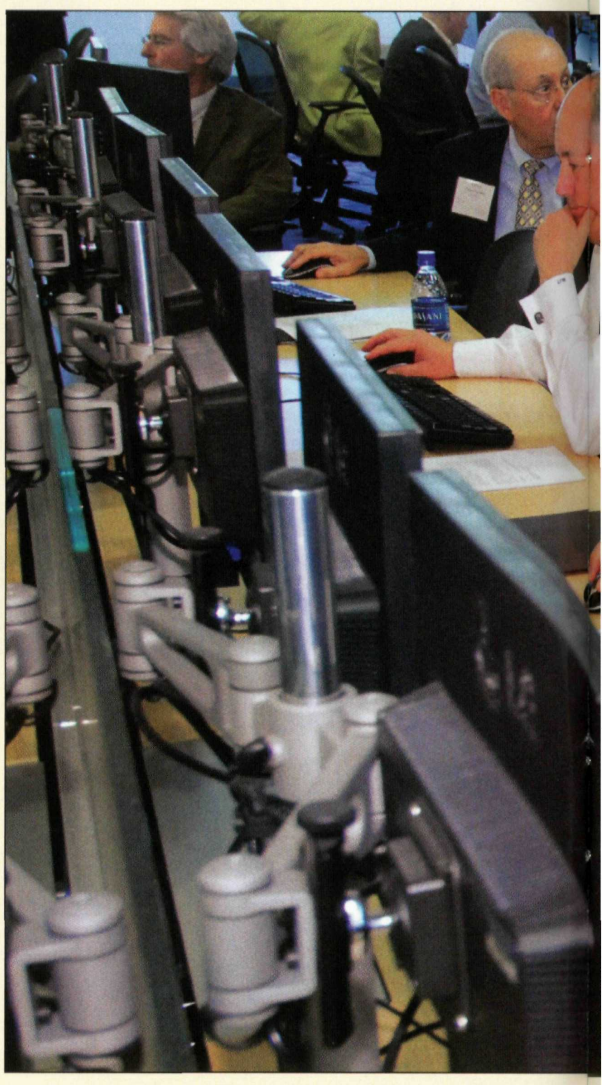
Georgia Tech scientists have devised a solution for the one in three adults who fail to take their medicines as prescribed by their doctors or for anyone else who occasionally forgets — a sensor necklace.

"Forgetfulness is a huge problem, especially among the elderly, but so is taking the medication at the wrong time, stopping too early or taking the wrong dose," says Maysam Ghovanloo, an assistant professor in Tech's School of Electrical and Computer Engineering. Drug noncompliance costs the country billions of dollars each year as a result of rehospitalization, disease progression and death.

The sensor necklace, designed by Ghovanloo and graduate student Xueliang Huo, records the date and time a pill is swallowed. The device also could be used to ensure that subjects in clinical drug trials take medications as directed.

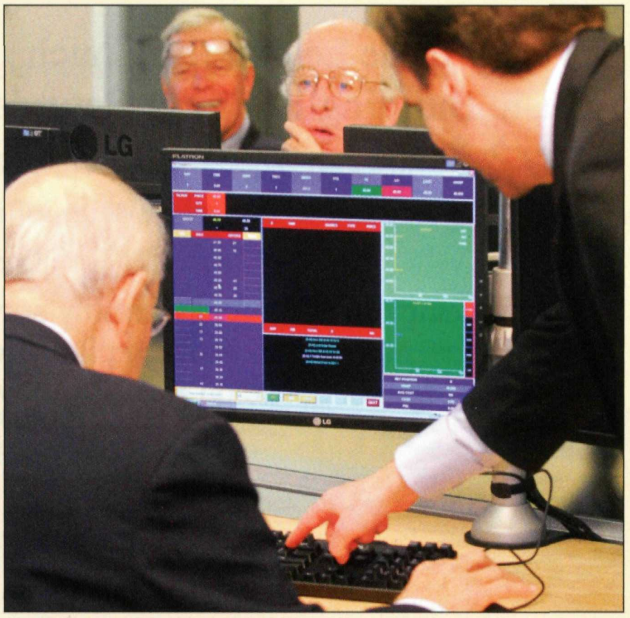
The necklace, called MagneTrace, contains an array of magnetic sensors that detect when specially designed medication containing a tiny magnet passes through a person's esophagus. And for people who don't want to wear a necklace, MagneTrace sensors can be attached to the chest.

The date and time the user swallows the pill can be recorded on a handheld wireless device, such as a smart phone. The information can then be sent to the patient's doctor, caregiver or family member over the Internet. The device can notify both the patient and the patient's doctor if the prescribed dosage is not taken at the proper time. **GT**



Sell! Buy! Sell!

Former trustees of the Georgia Tech Alumni Association got a sample of life on a trading floor at the College of Management. During the former trustees reunion in March, College of Management Dean Steve Salbu explained the invaluable learning experience the trading floor provides students, including being trained in the use of financial analysis and electronic trading tools and methods. The 2,000-square-foot Ferris-Goldsmith Trading Floor also serves as an important research arena for College of Management faculty. The facility is named for Dakin B. Ferris Jr., CIs 50, and Jere W. Goldsmith IV, IM 50.



Photos: Gary Meek

Supporting Music At Georgia Tech

Frank Clark, Ph.D.
Director & Professor
Music Department

During this school year, Georgia Tech Music students and faculty have benefited from the use of quality new Yamaha Pianos, Yamaha Disklaviers, and Yamaha Clavinovas. These superb instructments have been loaned to us at no cost by Yamaha Corporation of America. This generous program has allowed us to use outstanding pianos on a daily basis; pianos that are well beyond our budget capacity. At the end of this school year, these instruments will be made available for purchase at very reduced prices for Georgia Tech Alumni, Faculty, and Staff. These pianos are less than one year old, have been meticulously maintained, and come with a new warranty. Please support the Georgia Tech Music Department with your purchase. Having quality pianos is essential to providing the best education for our Georgia Tech students.

Preview Appointments for GT Faculty, Staff, & Alumni. Call 678-985-2612 Now to Schedule your Appointment

Event will be held at the Couch Music Building Friday & Saturday May 2 & May 3

Financing, delivery, and warranty services will be provided by England Piano, the local authorized Yamaha piano dealer. Any remaining pianos will be sold to the general public on Sunday, May 4.

Georgia Tech Alumni Association

Georgia Tech Music Dept.

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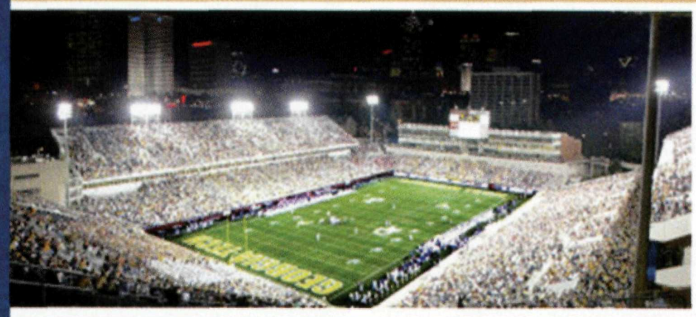

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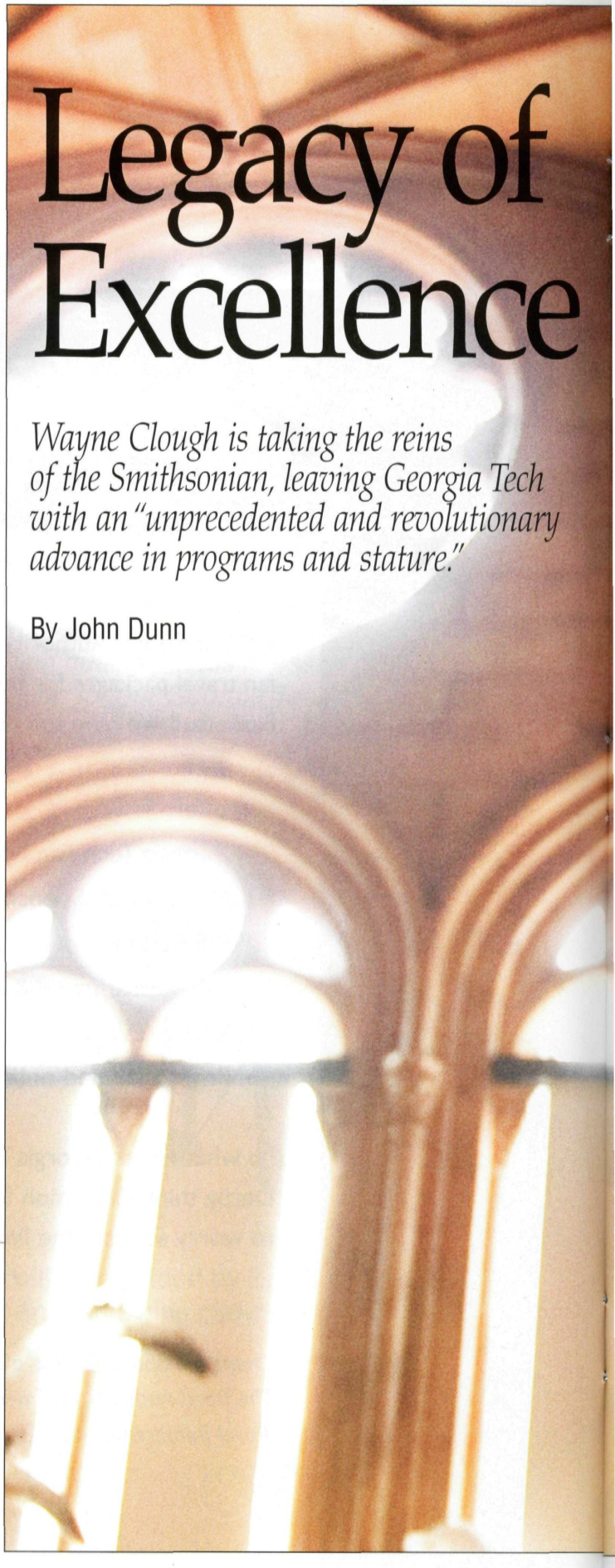
Legacy of Excellence

Wayne Clough is taking the reins of the Smithsonian, leaving Georgia Tech with an "unprecedented and revolutionary advance in programs and stature."

By John Dunn



Georgia Tech President Wayne Clough has been named chief executive of the massive Smithsonian Institution in Washington, D.C. He will assume the post July 1. Clough was selected to be the 12th secretary of the sprawling complex of museums by a unanimous vote of the Smithsonian's Board of Regents on March 14. His appointment was announced at a press conference the next day. The first alumnus to serve as president of Georgia Tech, Clough took office in September 1994 as the Institute's 10th president.

Forging a mantra that Georgia Tech could define the technological university of the 21st century, Clough has guided the Institute through an unprecedented era of academic excellence and prominence, strategic campus growth and expansion exemplified by more than $1 billion in new facilities, dramatic thrusts in research initiatives and capital campaigns that raised more than $1.6 billion.

"Wayne Clough has been one of the greatest presidents in Georgia Tech's history," says Gary Schuster, provost of the Institute. "His leadership and vision have been responsible for the unprecedented and revolutionary advance in Georgia Tech's programs and stature during his tenure."

During Clough's administration, Georgia Tech consistently has ranked among the nation's top 10 universities, research expenditures have increased to $473 million from $212 million, enrollment has increased to 18,000 from 13,000 and satellite campuses have been established in Savannah, France, Ireland, Singapore and China.

In one of its boldest moves under Clough's initiative, the campus expanded across the interstate connector and developed Technology Square in Midtown Atlanta, where the College of Management, Georgia Tech Research Institute and Georgia Tech Foundation are located.

"Wayne is an extraordinary leader who has guided Tech brilliantly by painting a broad strategic vision and ener- >>>

CLOUGH LEGACY ACCOLADES

Provost Gary Schuster:

"Wayne and I arrived at Georgia Tech around the same time. I recall one of the first strategic meetings I attended with him to discuss the formation of the Institute of Bioengineering and Bioscience. Others in the meeting suggested that the initiative could be housed by renovating a current building on campus. Wayne quickly asserted that we needed to think bigger than that if we wanted to make Tech a leading research university of the 21st century. He was right then and has continued to think bigger — which has led to the transformation of Georgia Tech into one of the best technological institutions of our time. He's been a legendary force at Georgia Tech

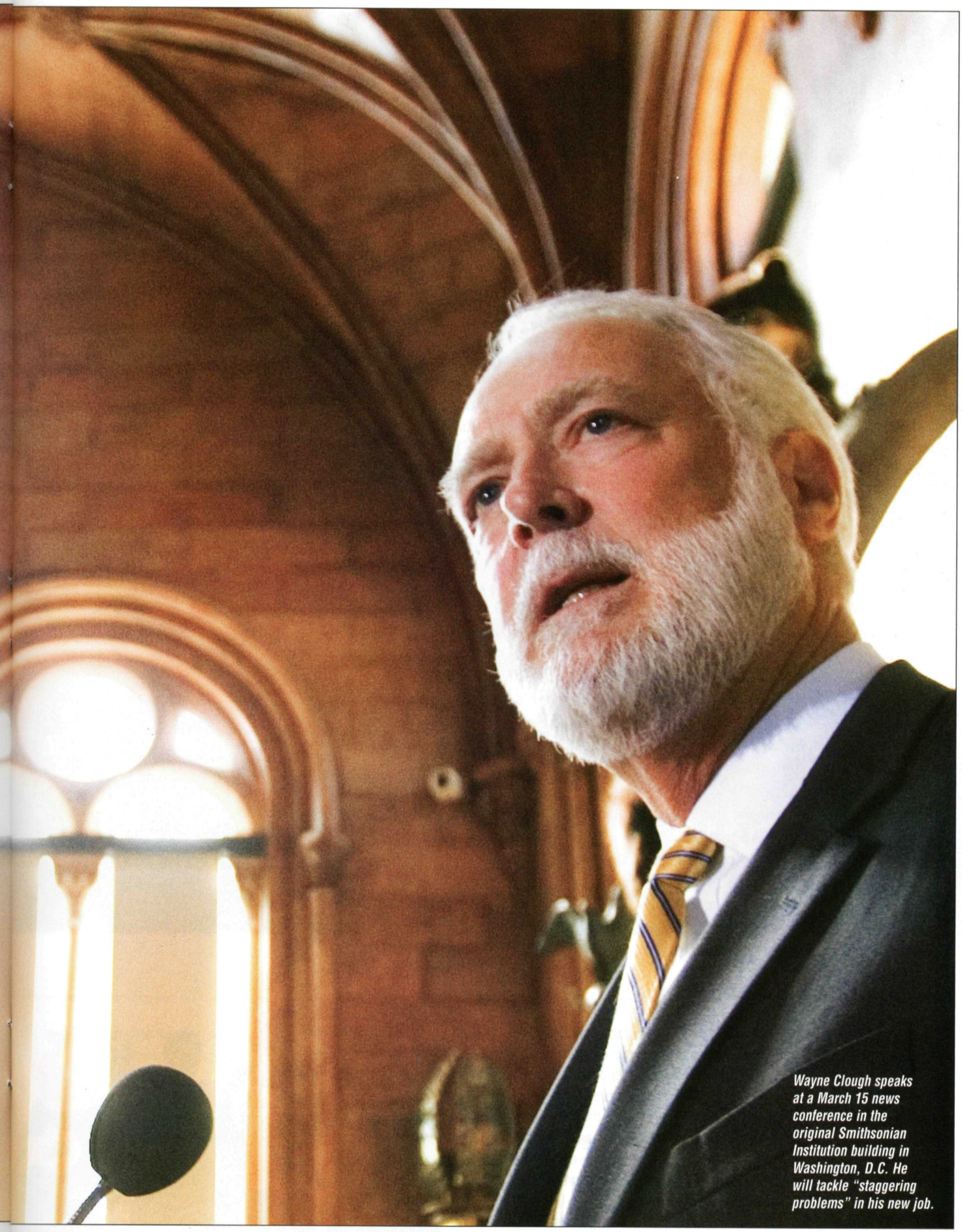


Photo: Associated Press

Wayne Clough speaks at a March 15 news conference in the original Smithsonian Institution building in Washington, D.C. He will tackle "staggering problems" in his new job.

gizing the people around him to fulfill that vision both within their responsibilities and across the organizational boundaries that usually hold back organizations of our size," says C. Meade Sutterfield, chair of the Georgia Tech Alumni Association.

The New York Times reported that in his new job Clough "faces the task of restoring stability to an institution that is struggling with a $2.5 billion shortfall, crumbling buildings and the repercussions of last year's scandal." Lawrence M. Small, former head of the Smithsonian, resigned after it was discovered that he was spending the Institution's money on personal pleasures, including private jets. New safeguards have been adopted concerning expenditures.

Smithsonian Regents chairman Roger W. Sant introduced Clough at the press conference and said he was selected because he has "a unique combination of academic achievement, talent, leadership skill and experience in public service, science, management and development."

Clough said, "I know the Smithsonian, for many people in their minds, is about the past." He added, "But it is not. It is about America's future."

Surprise Announcement

Clough's consideration for the Smithsonian post was a tightly kept secret and his election came as a surprise.

In an e-mail to the campus community, Clough said while the "new post presents many opportunities and challenges" he and his wife, Anne, "will always celebrate our lives at Georgia Tech."

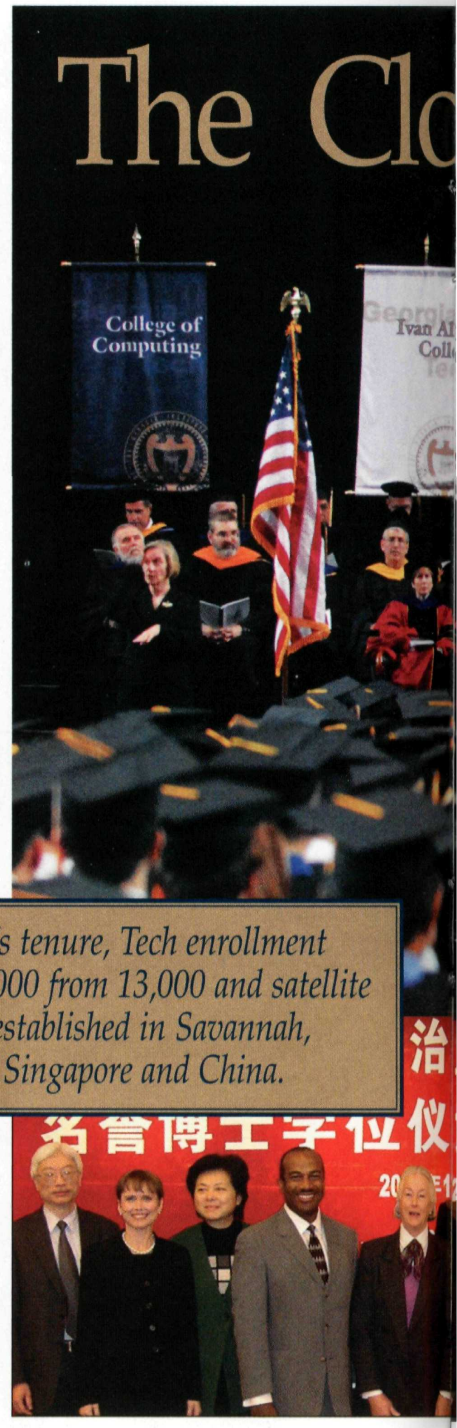
"After a rich and rewarding tenure as president, I am privileged to have one more remarkable opportunity and will serve as the secretary of the Smithsonian Institution," Clough added. "The Smithsonian is one of our great national assets, serving as a showcase of national history, the arts and the sciences.

"It has been my honor to serve as president of Georgia Tech for nearly 14 years. My life was enriched by my association with the great students, faculty, staff and alumni of the Institute," he said.

For Challenge, Not Money

Clough actually takes a pay cut in his new office. *The Washington Post* said Clough's annual salary with the Smithsonian would be $490,000. Small's salary grew from $333,000 to $916,000 after seven years. Clough's compensation at Georgia Tech is $551,186, including a $400,000 base salary, $133,000 in deferred compensation and $18,000 in retirement contributions.

The pronunciation of Clough has often puzzled people. *The New York Times* gave the phonetic pronunciation as "cluff" and *The Washington Post* rendered it as "kluf." Clough has a ready re- >>>

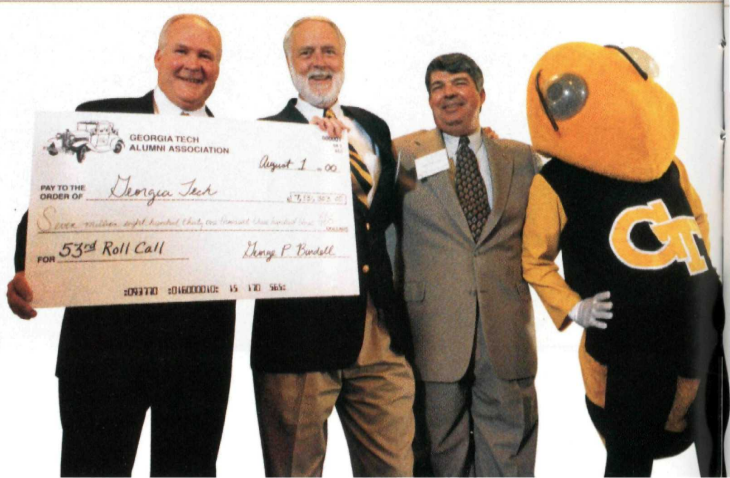


During Clough's tenure, Tech enrollment increased to 18,000 from 13,000 and satellite campuses were established in Savannah, France, Ireland, Singapore and China.

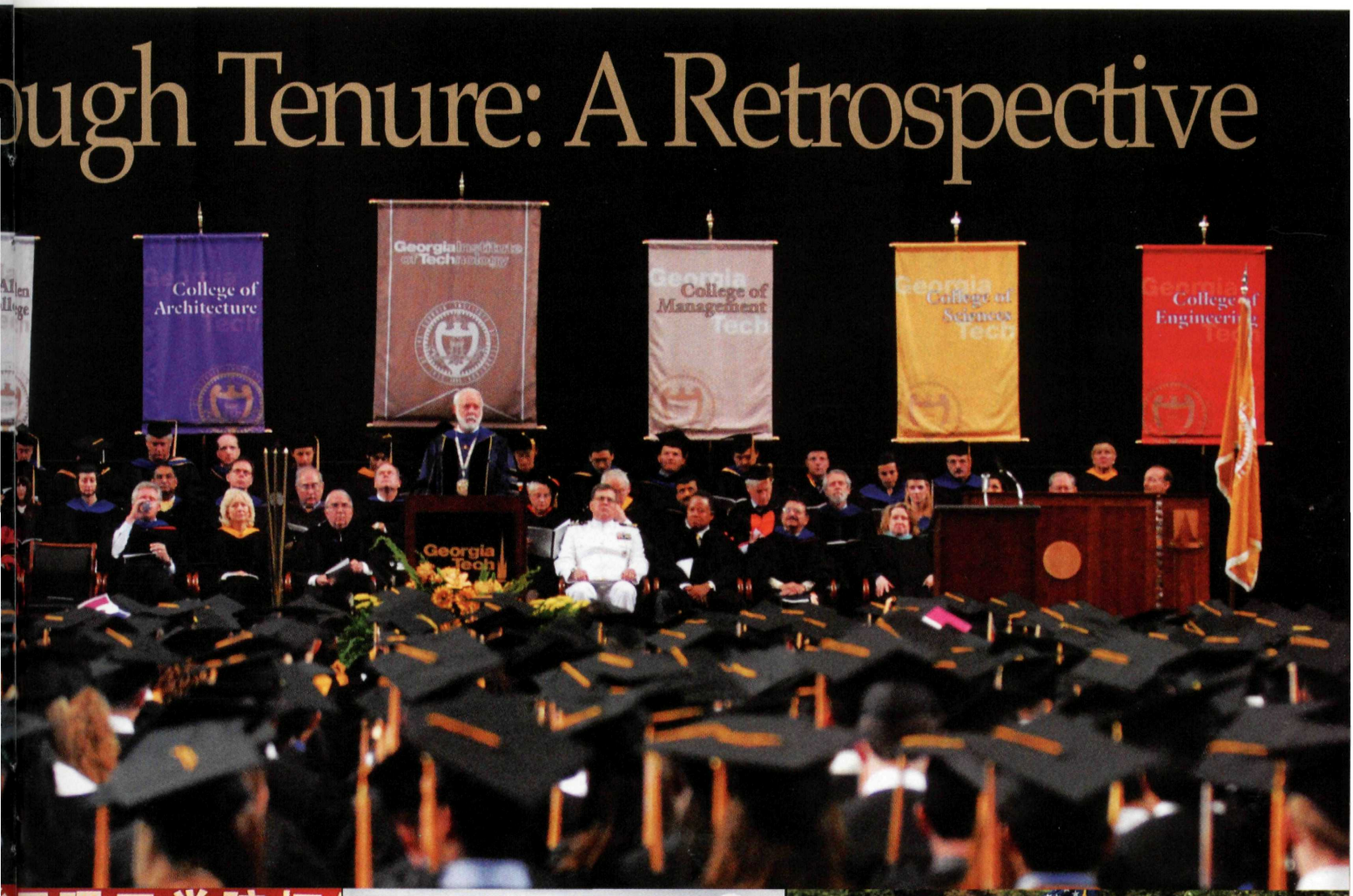
CLOUGH LEGACY ACCOLADES

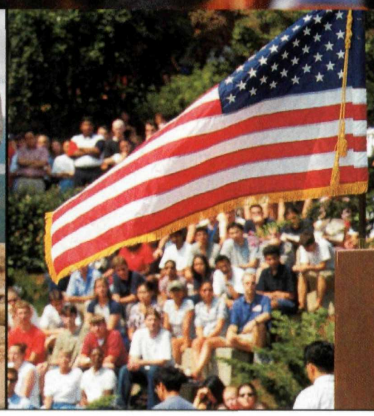
whose vision and leadership will continue to define and predicate our successes for years to come."

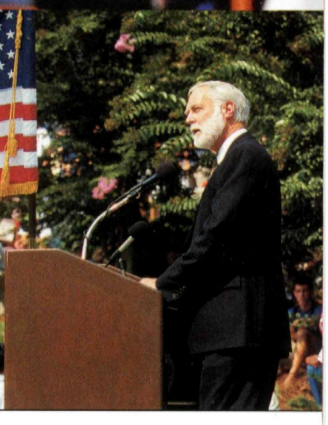
Wayne Hodges:
"Not only has Wayne Clough led Georgia Tech to greater prominence in academic and research circles, he has been a major force in sustaining and expanding Georgia Tech's role in commercialization and economic development. He understands the important role that Georgia Tech plays in expanding the economy of the community, state and the nation. The Technology Square economic development and commercialization activities and the Georgia Tech engineers in field offices across the



ough Tenure: A Retrospective







state who provide support and service to Georgia companies and communities are just a few of the results of Dr. Clough's vision and support."

— Hodges is vice provost, Enterprise Innovation Institute

Joseph Irwin:

"Wayne Clough is the most capable and accomplished president in the history of Georgia Tech. His vision, his ability to work with others and his passion for Georgia Tech have brought the Institute to a remarkable place. In short, he is one of the finest leaders I've ever worked with whether it's academia, corporate or government. The Smithsonian Institution will benefit as will the United States."

— Irwin is president, Georgia Tech Alumni Association

Sue Rosser:

"Someone from the search team for the Smithsonian called me for a reference about Wayne Clough's support for the humanities and arts, since they wondered about an engineer in that capacity. I was pleased to tell them that Georgia Tech is the only institution in the country to have two endowed chairs in poetry. Not only did President Clough help to raise the funds for the endowed chairs, but he and Anne Clough also attend most of

minder — think rough, tough, Clough, he says.

His new job may require him to be both rough and tough as he tackles what *The Washington Post* called "staggering problems," but he has a ready and disarming sense of humor.

The Times asked Clough if he was comfortable with the pay package, which does not come with corporate-style perks.

"I'm used to flying in seat 29E," he replied. "Obviously, if I can accumulate the mileage, I upgrade."

Clough was asked how he plans to restore public trust in the Smithsonian.

"I don't think the public trust has gone away," Clough responded. "There is tremendous residual goodwill for the Smithsonian. I think what we need to do is repair some bridges. We need to communicate, be transparent, reinvigorate the excitement about the Smithsonian that should be here."

The Nation's Museum

The Smithsonian is the nation's premier educational, historical and cultural archive. It has a staff of 6,300 employees, including about 500 scientists. It includes 18 museums, with a 19th in the planning stages, the National Zoo in Washington and nine research centers. The Smithsonian has a $1 billion operating budget, 70 percent funded by the federal government, and receives about 25 million visitors each year.

Clough said the Smithsonian resembles a large university in many ways but with the notable exception of not having a football or basketball team. "We'll just pass on that for the time being because there's plenty to do," he quipped.

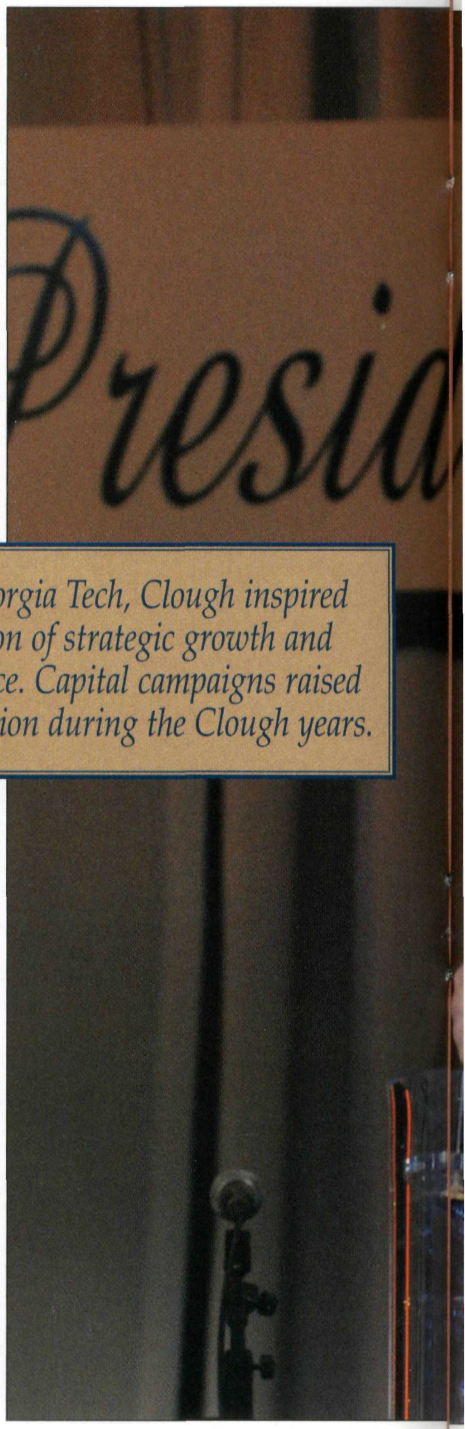
A Georgia Tech Grad

Clough received his bachelor's and master's in civil engineering from Georgia Tech in 1964 and 1965. He received a doctorate in civil engineering from the University of California at Berkeley in 1969.

A native of Douglas, Ga., Clough was provost and vice president of academic affairs at the University of Washington when he was selected to be Georgia Tech's president. He is a former dean of engineering at Virginia Tech and was an associate professor at Stanford and Duke universities.

Clough has been recognized for his teaching and research, including a total of nine national awards from the American Society of Civil Engineers, most recently the 2004 Outstanding Projects and Leaders lifetime award for contributions to education. He is one of a handful of civil engineers to have been twice awarded civil engineering's oldest recognition, the Norman Medal, in 1982 and 1996.

In 1990, he was elected to the National Academy of Engineering. >>>



As president of Georgia Tech, Clough inspired alumni with a vision of strategic growth and national prominence. Capital campaigns raised more than $1.6 billion during the Clough years.

CLOUGH LEGACY ACCOLADES

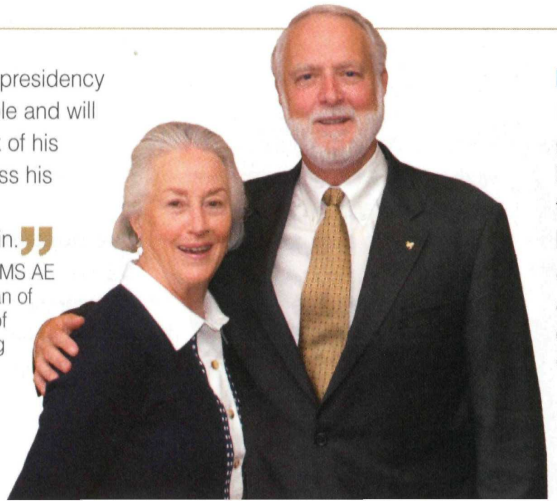
the poetry readings that we hold each year and have taken a personal interest in the development of Poetry@Tech."

— Rosser is dean, Ivan Allen College

Don Giddens:

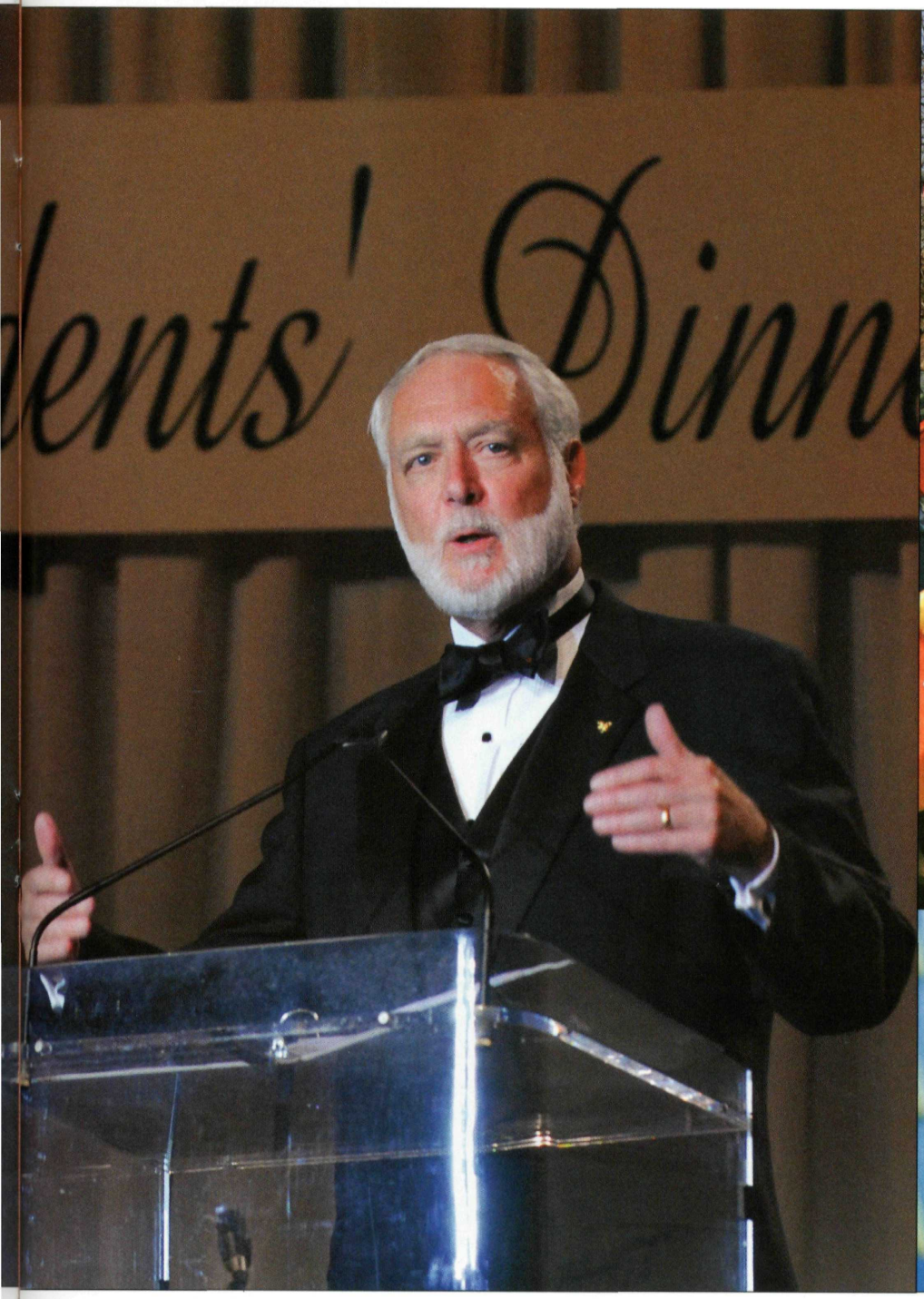
"Wayne Clough has made a tremendous impact on his alma mater. The transformation of the campus during his presidency has been remarkable and will stand as a hallmark of his legacy. Tech will miss his leadership, and the Smithsonian will gain."

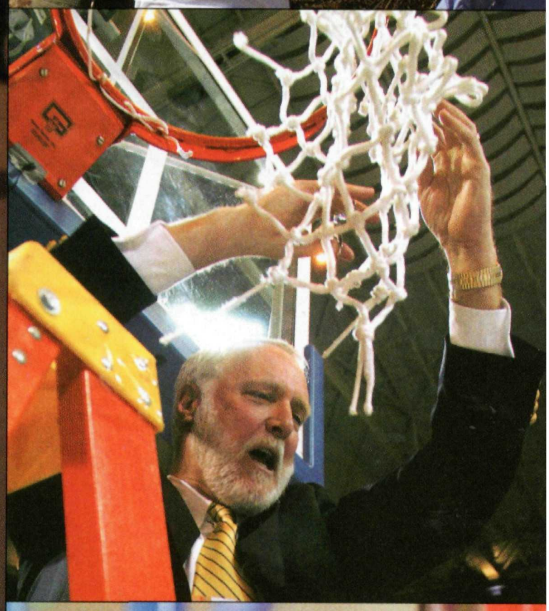
— Giddens, AE 63, MS AE 65, PhD AE 67, is dean of the College of Engineering

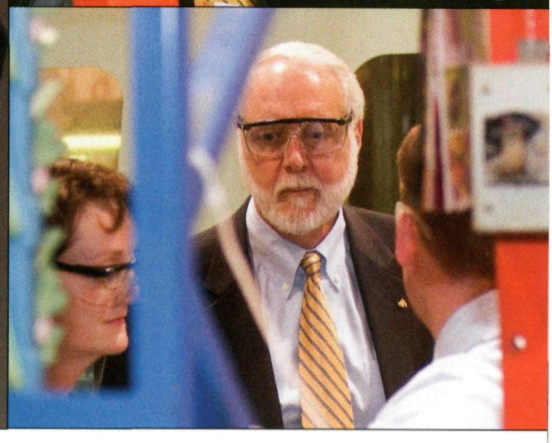


Hubert L. Harris Jr.:

"Wayne Clough has been a great leader for Georgia Tech. He had a vision of what it takes to be a great university and he developed a strategy to achieve that for Georgia Tech and then implemented it. The Georgia Tech family owes a 'thank you' to Wayne for all he







has accomplished for us."

— Harris, IM 65, is chair of the Georgia Tech Foundation

Janice N. Wittschiebe:

"I have been constantly amazed at Wayne Clough's energy as the face of Georgia Tech for such a long time. He is always gracious, no matter to whom he is speaking, and you feel a connection to him and to Georgia Tech. We will miss his calm counsel in all matters and his vision for the future of Georgia Tech."

— Wittschiebe, Arch 78, M Arch 80, is past chair of the Georgia Tech Alumni Association and a board member of the Georgia Tech Foundation

William J. Todd:

"This prestigious appointment brings great credit to Wayne Clough and to the Institute that he led so very well for 14 years. I am confident that he will take the Smithsonian Institution to the next level just like he did at Georgia Tech. This is a wonderful opportunity for him to make a contribution to the country as he leads an important national cultural icon.

As the first alumnus to serve as Tech's president and arguably the best president in the Institute's history, he will long be remembered for his contributions to undergraduate education. The statistics tell the story — retention rates of freshman students are at

CLOUGH LEGACY ACCOLADES

an all-time high, no more 'look to the left, look to the right' junk at freshman orientation. The rigor is still present, if not even more so, but the systems of support are in place to enable everyone to succeed. Wayne deserves enormous credit for Tech's standing in American higher education. I am proud that his signature appears on my two sons' diplomas."

— Todd, IM 71, is chair-elect/finance, Georgia Tech Alumni Association

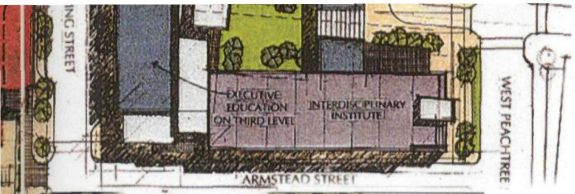
Gary May:

"Wayne Clough has been an invaluable friend and mentor. He is absolutely the most capable and admirable person I have ever worked with or for. It is difficult to express how fortunate we at Tech have been to have benefited from his leadership. The most memorable qualities that Dr. Clough has are his humility and ability to communicate effectively with nearly everyone he encounters — regardless of their station — and make them feel like they have been heard and their views are valued. This holds true for everyone from the custodial staff in the Carnegie Building to the president of the United States."

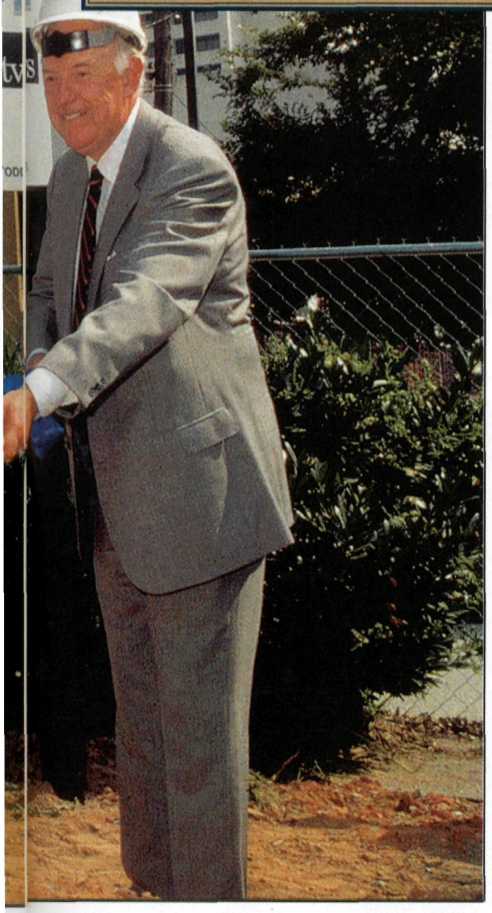
— May, EE 85, is Steve W. Chaddick chair, School of Electrical and Computer Engineering

Meade Sutterfield:

"Wayne is an extraordinary leader who has guided Tech



Technology Square was a major expansion initiative of the Clough years. During his presidency, campus expansion resulted in more than $1 billion in new facilities, and research expenditures more than doubled, from $212 million to $425 million.



Clough received the 2002 National Engineering Award by the American Association of Engineering Societies and was named as a distinguished alumnus from the College of Engineering at U.C. Berkeley in 2004. He received an honorary doctorate of science from Shanghai Jiao Tong University in 2005.

President George W. Bush appointed Clough to the President's Council of Advisors on Science and Technology in 2001 and to the National Science Board in 2004.

Clough's other service activities include vice chair of the U.S. Council on Competitiveness, for which he co-chaired the 2004 National Innovation Initiative, chair of the National Academies Committee on New Orleans Regional Hurricane Protection Projects and chair of The Engineer of 2020 Project for the NAE.

Building a Team at Tech

Clough has said his most rewarding achievement at Tech was "helping to create an outstanding team of administrators, faculty and staff that has led to the advancement of Georgia Tech as an institution — creating a standing that is seen in a similar light with some of the great institutions in the country. A coordinated and inspired team effort allowed Georgia Tech to make strides few others can match."

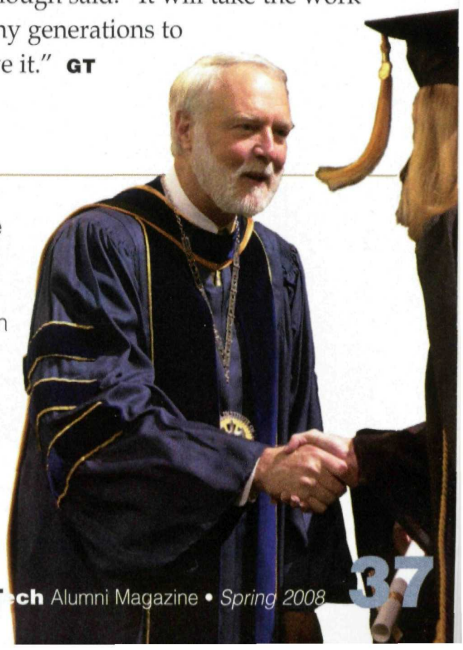
One of Clough's first objectives at Tech was to develop a strategic plan. In recalling that effort, Clough said, "As we began the process of developing a strategic plan, people asked me what my vision was. My vision was not relevant at that stage — we very much needed to develop a shared vision for the future of the Institute.

"At the time of my arrival on campus, there was a lack of appreciation of the need for a team approach and for faculty, staff and administration to work together to advance the cause," he said. "Once we had a shared vision, we all knew exactly what we were working toward."

In discussing the goal to define the technological university of the 21st century, Clough said, "It is important to set a standard for everything we do. If we say we want to be good at leadership, it means we want to be one of the very best. If we say we're interested in having a diverse student body, we want to be a national leader. If we say that technological policy is important, that means that Georgia Tech wants to help the nation in this endeavor.

"It also never allows us to be complacent, even when we have accomplished what seems to be a lot.

"The goal remains well in front of us," Clough said. "It will take the work of many generations to achieve it." **GT**



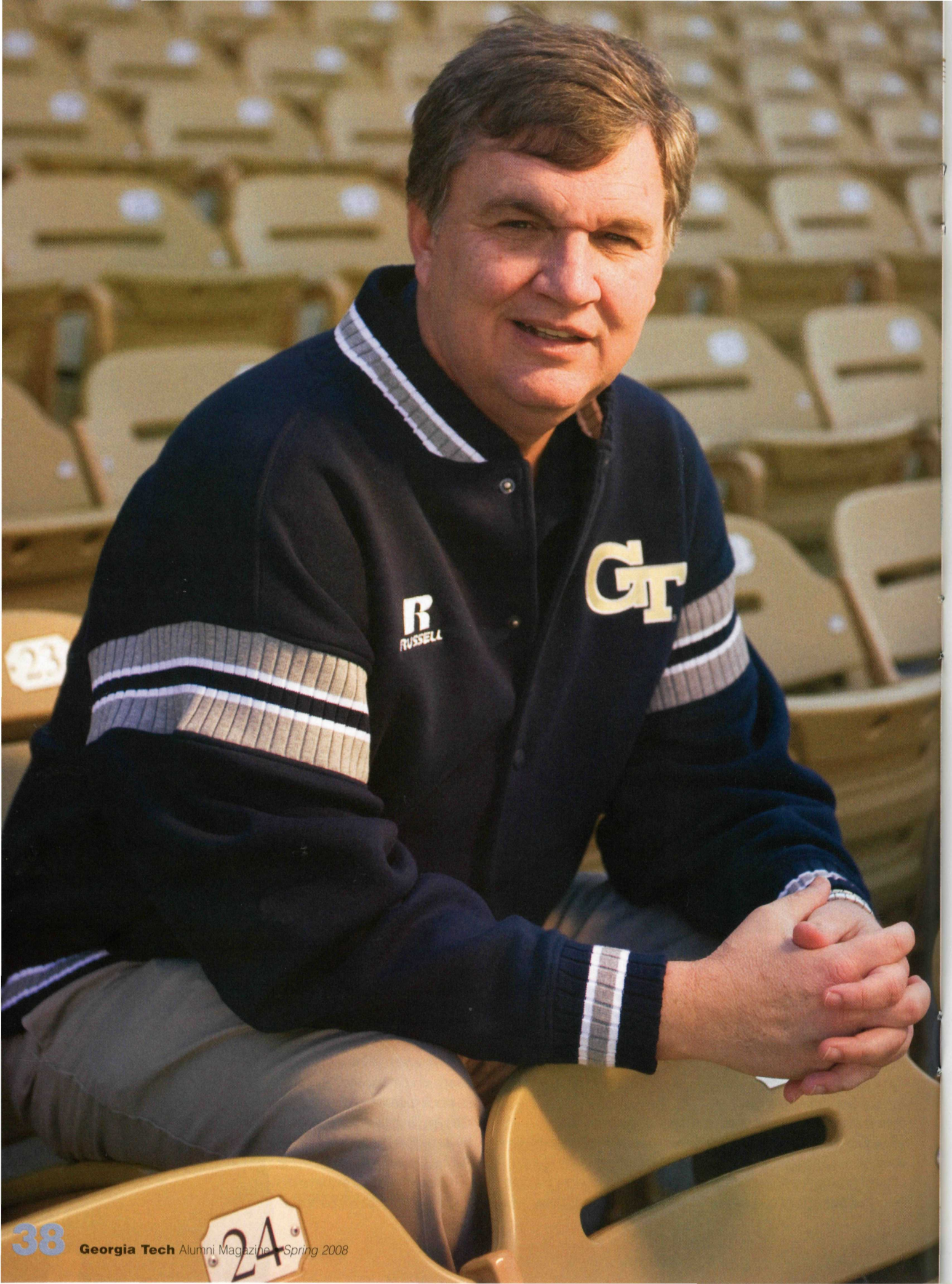
brilliantly by painting a broad strategic vision and energizing the people around him to fulfill that vision both within their responsibilities and across the organizational boundaries that usually hold back organizations of our size. It is up to those of us in the Tech community to keep that momentum and sense of cooperation that have marked his years."

— Sutterfield, EE 72, is chair of the Georgia Tech Alumni Association

Don Chapman:

"Wayne Clough was the right man for Georgia Tech at the right time. He brought the right vision, the right execution skills and the right people skills to take Tech not just to the next level but several levels up. Most of all, he swept all complacency and put in its place a desire to exceed. Georgia Tech has been blessed by its partnership with Anne and Wayne Clough."

— Chapman, IM 61, is past chair of the Georgia Tech Foundation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RUSSELL
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Tech's new gridiron general, a master of the triple option, hammers home his strategy

Run the Ball, Stop the Run, Win the Game

By John Dunn
Photography: Michael Schwarz

"Are we going to do something different than they've been doing here? Sure. The defense will be similar, but the offense will be much different."

There's no secret to winning football games, says Paul Johnson, Georgia Tech's 12th head football coach. "In a nutshell, to win football games you have to be able to run the ball and stop the run. I think that has always been true and it's never changed."

Johnson draws from his strategy about the game.

"Teams that consistently win can run the ball and stop the run. Does that mean that they are not a team that throws the ball? Not at all. But it means that when they have to run the football, they can. When they have to stop the run, they can. If you look at the stats at most football games, the team that rushes for the most yardage usually wins the game."

It's a strategy Johnson has already put cleats on. Before taking the wheel of Georgia Tech's Ramblin' Wreck football program, Johnson spent six years at the helm of the U.S. Naval Academy, where his Midshipmen made waves last year by leading the nation in rushing for an unprecedented third consecutive year, averaging more than 350 yards per game.

"Are we going to do something different than they've been doing here? Sure. The defense will be similar, but the offense will be much different," he says.

Johnson, who won the Bobby Dodd National Coach of the Year award in 2004, occupies a glass-enclosed office suite above the North Stands that overlooks the lush turf of Grant Field, where Dodd's gridiron genius vaulted him into a legend.

Johnson bears the bona fide credentials to bring his own brand of football heroics to Grant Field at Bobby Dodd Stadium.

The "something different" that will be most apparent next fall will be Johnson's version of the triple option offense. He described his style of offense to veteran *Atlanta Journal-Constitution* sports columnist Furman Bisher as "a combination of the old wishbone, the run-and-shoot and some of our own ingredients."

Scout.com observed, "There's no question that Johnson's calling card is his offensive wizardry, a potent combination of schematic precision and play-calling feel that won a boatload of ball games at Georgia Southern and Navy."

Johnson's mastery of the option offense and a staunch defense was notable. The Naval Academy called his transformation of its football program an accomplishment of "historic proportions."

Johnson took over a program in 2002 that had seen only two winning seasons in 20 years. During the 2000 and 2001 seasons, Navy sank to one win and 20 losses — its worst two-year span in the 123-year-old program. In Johnson's first year, the Middies won only two games and lost 10. At the end of six years, however, Johnson was 45-29 at Navy, including five straight bowl seasons. He coached Navy to an unprecedented six straight wins against Army. Last season, Navy ranked among the nation's highest-scoring teams, averaging 39.92 points per game. The team also ranked in the top 10 nationally in kickoff returns and in fewest sacks allowed.

Feats Thought Not Possible

Tech noticed. Johnson was hired to replace Chan Gailey, who had six winning seasons at the flats but was 0-6 against Georgia. Athletics Director Dan Radakovich noted that Johnson "accomplished feats at a service academy that many thought were not possible" and signed him to a seven-year contract worth "a little north of $11 million."

At a Dec. 7 press conference announc- >>>


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"How long will it take to get to where we want to go? I don't have any idea. But I know we're going to work hard at it every minute of every day and we're not going to accept less than the final goal, because if you do, you're not going to get there."

ing that Johnson was Tech's new football coach, Radakovich told the media Johnson "looks at his talent and maximizes it. He uses what it takes to win games," and he will "energize our fans and fill our stadium every Saturday afternoon with fun and excitement."

Coaching football was Johnson's boyhood ambition.

Seated in a black leather chair in his new office, Johnson recalls growing up in the small town of Newland, N.C., where he played football, baseball and basketball.

"I enjoyed being around the game. I like the competition aspect of it. When I figured out I wasn't going to be good enough to play, coaching seemed to be the logical thing," he says.

Johnson says his father, also named Paul, had the greatest influence on his life. He worked for the Tennessee Valley Authority. "Just seeing how hard he worked and his work ethic — he got up every morning at 5 o'clock and went to work — I thought that's what you were supposed to do. He tried to worry only about the things he could do something about — the other things, he just let go. I look back now and I guess we'd be classified as poor. At the time, I didn't realize it."

How Long to Get It Fixed?

Another person who Johnson says was a major influence on his life was the late Elmer Aldridge, his football coach at Avery County High School. "My goal was to go back and be the coach at my high school. That's what I wanted to do," he says.

Johnson attended Western Carolina University, where he met his wife, Susan. They have been married for 28 years and have a daughter, Kaitlyn, 15. He earned his bachelor's in physical education in 1979 and began his coaching career under Aldridge in 1979-80 as offensive coordinator and line coach at Avery County High.

In 1981, he accepted the job as offensive coordinator at Lees-McRae Junior College. His offensive unit climbed to sixth place in the National Junior College Athletic Association. The next year, he earned his master's in health and physical education from Appalachian State. Georgia Southern head football coach Irk Russell hired Johnson as defensive line coach in 1983, but two years later, he was named offensive coordinator. He coached an Eagle offense that rewrote the school record books and claimed I-AA titles in 1985 and '86.

Johnson became the University of Hawaii's offensive coordinator in 1987. He spent eight seasons with the Rainbows and directed an offense that helped win the Western Athletic Conference title and a bowl appearance. He returned to Georgia Southern as head coach and led the Eagles to the 1999 and 2000 national championships.

Navy invited him to get its program shipshape. He exceeded everyone's expectations, but it didn't happen on a timescale.

"How long? They asked me that at Navy when I came in and the program was in disarray. Do you have a plan for how long you think it will take to get it fixed? My answer was the first game. When it didn't get fixed until after the first season, it was frustrating. We just kept our head down and kept working and felt like if we worked hard enough it would turn," Johnson recalls.

Does he have a five-year plan for Georgia Tech?

"I don't even have a five-minute plan," Johnson says easily. "I try to do everything I can during the actual time to make sure that we're getting better at whatever we're doing. I don't have this long laid-out plan. How long will it take to get to where we want to go? I don't have any idea. But I know we're going to work hard at it every minute of every day and we're not going to accept less than the final goal, because if you do, you're not going to get there."

He downplays his expectations for next season. "I don't have any other than to be the best team that we can be and to get better every week. After the first two or three games, I can't tell you who we play. I know the teams in the league. My focus now is not so much on who we play but on ourselves. I want to make sure that we get better. If we get better every day, then it won't matter who we play. And if we don't, it won't matter who we play either."

When he wants to relax, Johnson plays golf and enjoys fishing. And he enjoys horse racing. "When we lived in Maryland, there was a track not far from the house. I was a fan."

Because of his career and schedule as >>>

a coach, Johnson says his wife has been the anchor in their home. "Susan has pretty much done more raising of our daughter, Kaitlyn, than I have, but we have a close family. We do a lot of things together, and we always try to take at least one family vacation a year."

Every Christmas, he says, they spend time in North Carolina, where they both have families. And for the past couple of years the Johnsons have gone on cruises.

"I enjoyed it more than I thought I would," he says with a smile, explaining that Susan likes a structured vacation. "My idea of a perfect vacation is you don't have a plan. I'd go back to North Carolina, back to the mountains. I'd just hang out and fish or play golf or whatever I wanted to do when I got up. That'd be my perfect vacation."

'We Blanket the State'

Johnson attributes much of his success as a head coach to being "surrounded by good people. You've got to be who you are," Johnson says. "I've had the opportunity to work for some good coaches. You pull and take from each person."

At Georgia Southern, coach Russell had the reputation of being a rough, rugged, even brutal competitor.

"He wasn't at all," Johnson says. "He was kind of a patsy really. The biggest thing I would take from my time working with coach Russell was how to deal with people. He had this knack — he could find people's hot switch. It wasn't out of fear. I think the guys that played for him had a genuine love for the guy."

In spring practice, the coaching staff will work to "get our system in," Johnson says, and he'll be looking for players who "want to compete and aren't afraid to work."

The defense will be similar to returning players, but the offense will be "way different," he says. Practice will be at a faster pace.

"It'll take a while for those guys to learn the speed at which we practice," Johnson says. "Once they're here for a little bit and they become accustomed to the effort and the kind of intensity that we're looking for, then it just transcends. When the new guys come in, they just fall in and they follow through. This first spring will be interesting."

Johnson says he intends to build a Yellow Jacket fan base in Georgia and doing so will be a factor that drives recruiting.

"It is my philosophy that we blanket the state of Georgia," Johnson says of his recruiting objectives. "This year we signed nine in-state guys. I'm hoping in years to come it will be even more. Certainly with the reputation of Georgia Tech we have the ability to recruit nationally. But I don't want to drive past a lot of good players here in Georgia or in the metro Atlanta area and get somebody who is exactly the same three states over. It doesn't make sense to me in terms of drawing support or building a fan base.

"You think of rivalries like Georgia Tech versus Georgia, a guy from Dublin, Georgia, is going to have a lot better idea of that than a guy from Dublin, Ohio. I think that comes into play sometimes."

Johnson says recruiting went well, especially considering the limited amount of time he had.

"Recruiting is about relationships. That is one of the reasons I was happy with the way we were able to close this year, because in all reality, our staff had about four weeks because of the way the situation unfolded with the bowl game and the previous staff not leaving until after the bowl game. It was a scramble.

"This year, we'll have a lot more time to develop those relationships. We have coaches who have a lot of experience in the state, and I know a lot of the high school coaches in Georgia," Johnson says.

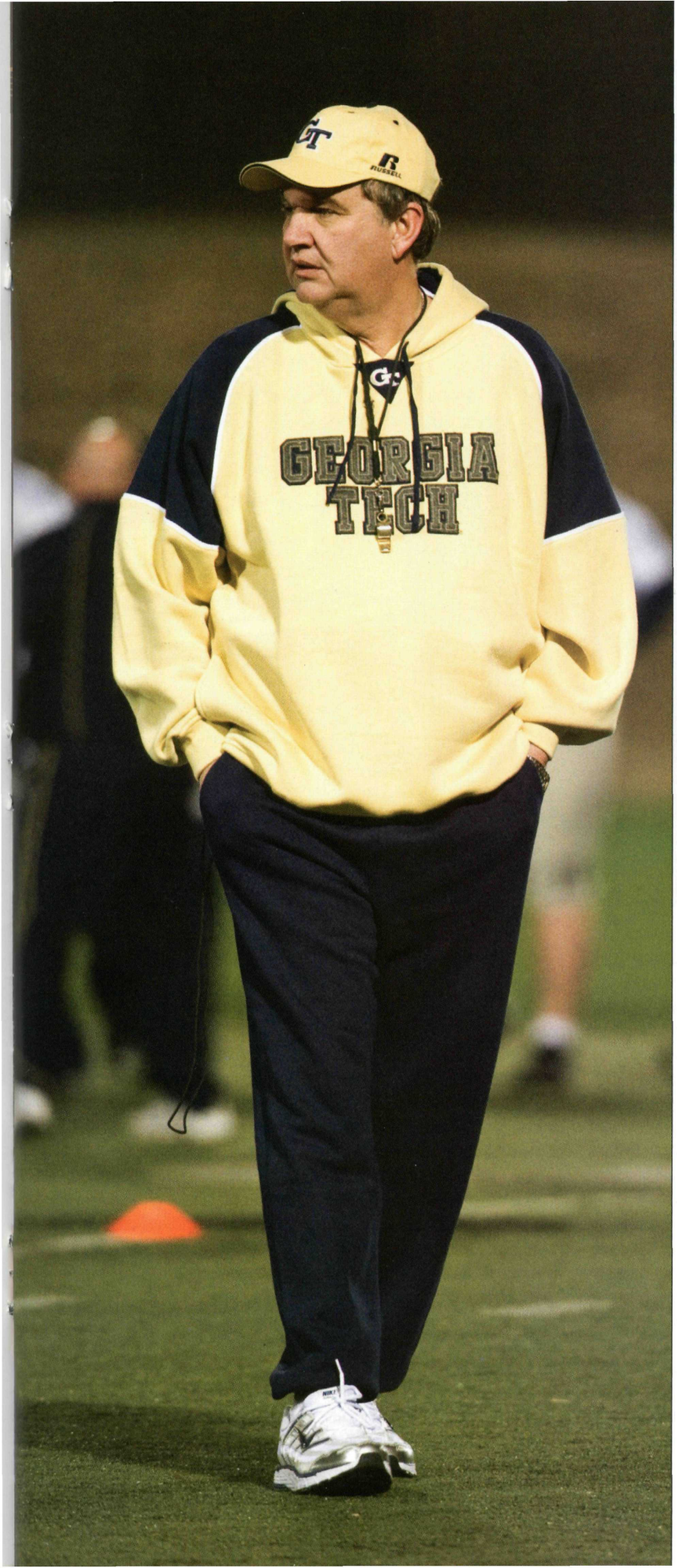
Tech secured letters of intent from 20 graduating high school students who signed to play football for the Jackets.

"We addressed almost every position on the field," says Johnson, adding that he concentrated on increasing the team's speed. "We went after a lot of guys who could run. It has been my experience in football that if you can run, you have a chance to do some pretty good things, and those guys who can't run don't do too many good things."

Johnson immediately began a 6 a.m. workout program to strengthen players.

"The one area where I think we can make an immediate improvement is our toughness," Johnson says. "We have some pretty good ath-

"This year we signed nine in-state guys. I'm hoping in years to come it will be even more. Certainly with the reputation of Georgia Tech we have the ability to recruit nationally. But I don't want to drive past a lot of good players here in Georgia."



letes, but I don't know if we are as physically tough or as mentally tough as we need to be."

Johnson says he will not pal around with the players.

"I told the team, 'Look, I don't want to be your buddy. I've got buddies, you've got buddies. You've got guys you want to hang out with. You don't want to hang out with me. It wouldn't be any fun.'

"My job is to come in and establish a foundation and a set of rules and try to make these guys be the best that they can be — not just from a football standpoint but as students as well."

The Big Picture

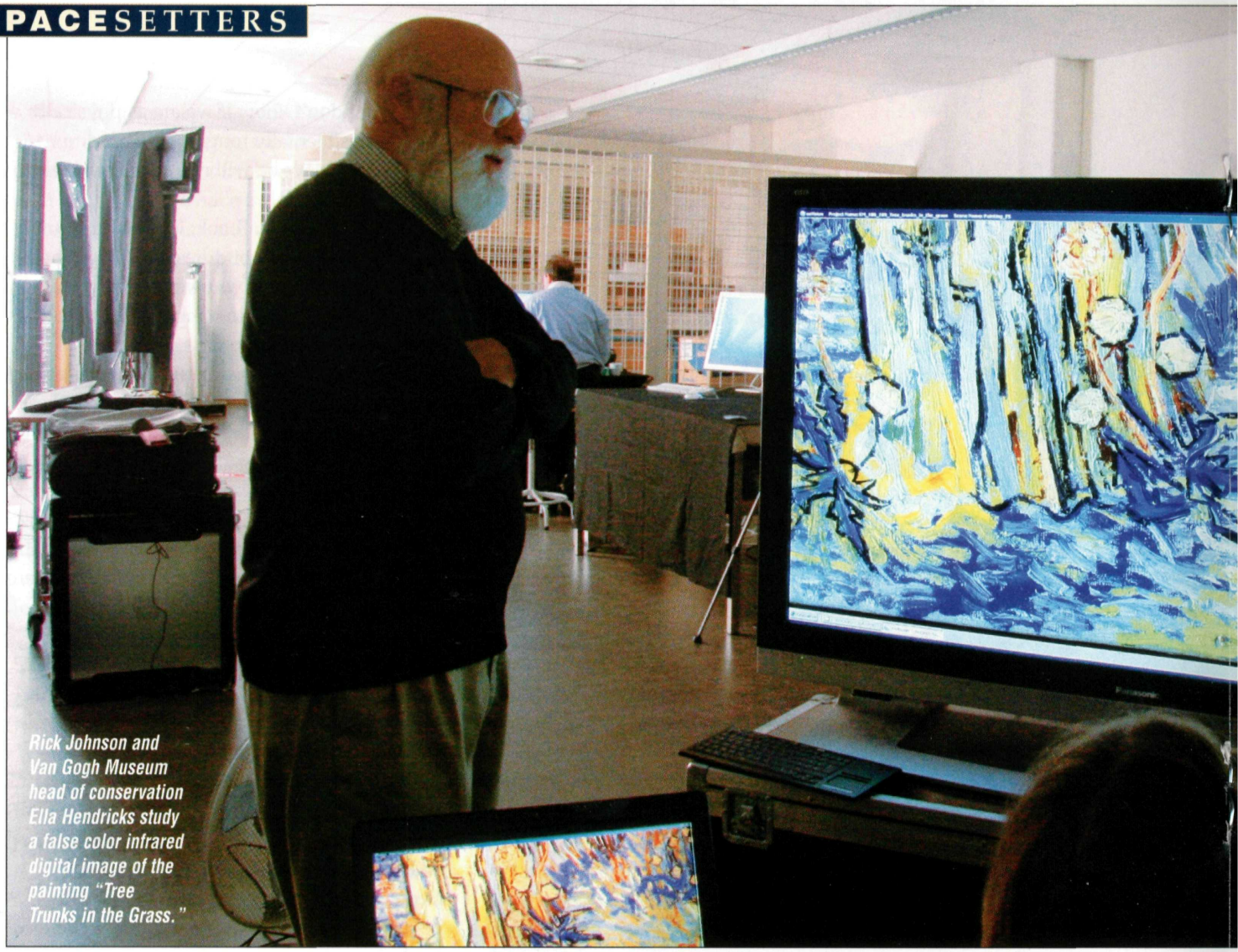
Johnson says he and the coaches on his staff will mold the players into a team. "I'm there for each individual, and I'm here for the problems that they have. But in the big picture, I'm going to do what is best for the team, and the team takes precedence over one individual.

"One of the problems that I saw here — I don't know that it was a discipline problem, it's just a different way of doing things, but there was a real divide between offense and defense and special teams. On the scoreboard it says Georgia Tech. If you lose, we all lose — the defense loses, the offense loses, the special teams lose. It's a team game."

Johnson adds that there is "a very thin line" that differentiates winning and losing. "There's not much difference. There's an old saying that physical superiority cancels all theory. That's true to a point, but there's attitude involved, intensity and caring — and all those things come into play. Doing the little things sometimes gives you a chance to make the big things happen. There's a real small margin of error between winning and losing."

Johnson, who was a finalist for the 2007 Liberty Mutual National Coach of the Year, says his job will be to develop players who win.

"It's been my experience in coaching that guys want to win. There are 119 schools playing Division I football. I guarantee you, if you ask every one of those players, they'll all tell you they want to win. The key is do you know how to win and are you willing to do what it takes to win? That's what we're going to find out. We can show them what it takes to win." **GT**



Rick Johnson and Van Gogh Museum head of conservation Ella Hendricks study a false color infrared digital image of the painting "Tree Trunks in the Grass."

Uncovering Surprises

Engineering professor applies technology to authenticate works of art

By Robert Emro

Growing up in small-town Georgia, C. Richard Johnson Jr. never visited an art museum, heard a classical music concert or attended serious theater. A second-grader when the Soviets launched Sputnik 1 and the ensuing space race, Johnson was channeled into engineering when he exhibited an early aptitude for math and science.

Not until he was a student at Georgia Tech did he get his first taste of fine art. Johnson, EE 73, was in Germany with a study abroad program. His travels took him to the Gemaldegalerie (picture gallery) in Berlin.

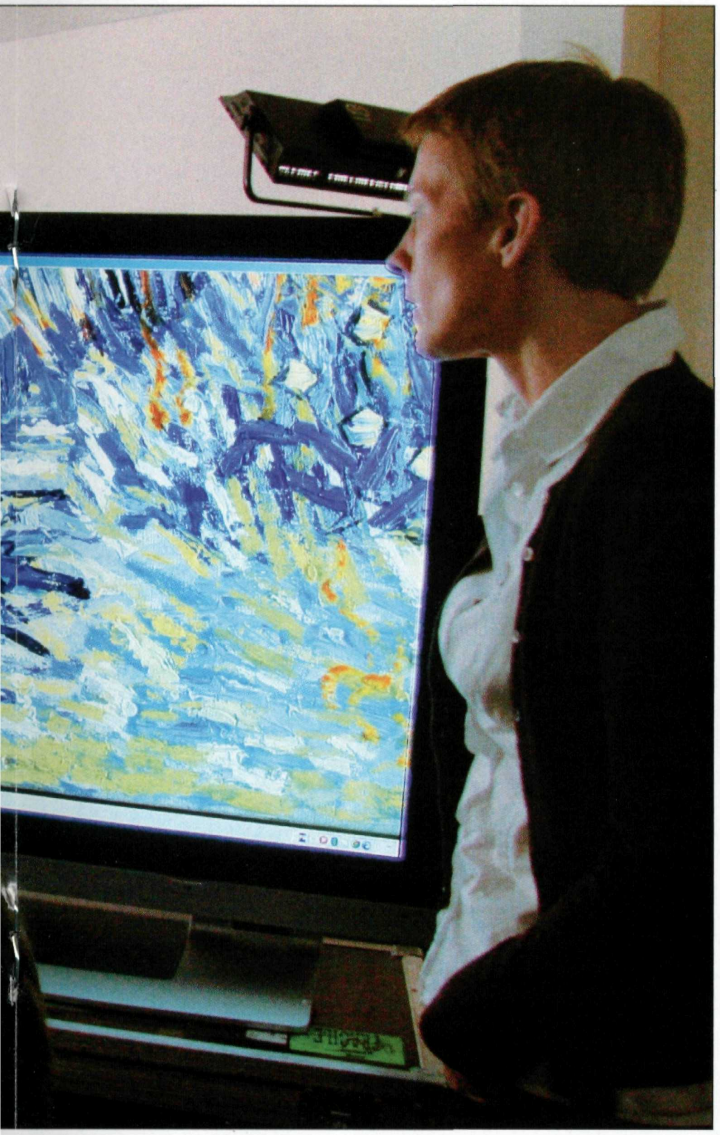
When Johnson visited in the early 1970s, it held an impressive collection, including "The Man With the Golden Helmet," one of Rembrandt's most famous paintings. Seeing it for the first time was a revelation. "I spent hours in the Rembrandt rooms," says Johnson. "I didn't know why. I just had some kind of response to it."

As an electrical engineering grad student at Stanford University, Johnson took a course on Rembrandt knowing that if he bombed, the F would not appear in his record. Far from flunking, he was one of the star pupils. During one test, he was the only person to realize that a slide of a Frans Hals painting had been loaded backward. He could tell because Hals always painted the light falling from the left.

Johnson graduated in 1977 with Stanford's first PhD minor in art history. The topic of his final project, appropriately enough, was Vermeer's use of the camera obscura. Careful measurement of the angles in his paintings and reconstructions of the rooms in which he painted them have led some to argue that Vermeer used this rudimentary optical device in creating his almost photographic paintings.

"It was a survival technique to get myself through engineering, to some extent," says Johnson. "Art history is something I found a passion for that I see in my students for technical things that I sometimes don't have."

Johnson joined the Cornell faculty as an associate professor in 1981. He continued a successful academic engineering career in the School of Electrical and Computer Engineering, first work-



ing on the theory behind adaptive feedback systems, used to kill the echo you can sometimes hear while talking on the telephone. Then he created and analyzed blind equalization algorithms, used in receiving high-definition TV. In 2005, when he was ready to change his research focus once again, he began wondering how his expertise in signal processing could get him a backstage museum pass.

Art historians and curators use a variety of technologies to study paintings, including X-radiography, infrared photography and UV fluorescence. While on a Fulbright scholarship in Paris, Johnson arranged a lunch meeting with a curator at the Van Gogh Museum in Amsterdam. He offered his services as a translator, helping the art history experts communicate with technical types doing image processing.

While preparing a presentation to museum management, Johnson discovered that these tools helped de-attribute the very painting that awakened his passion for art in the first place. In 1985, the Rembrandt Research Project determined "The Man with the Golden Helmet" was not painted by Rembrandt but by an unnamed apprentice.

The museum liked the idea of having an expert in signal processing to help connect them with computer-based technology used in painting authentication and gave Johnson a five-year appointment as an adjunct research fellow. "I'm like a PhD student again, working for the head of conservation at the Van Gogh Museum," he says. "Whether the data comes from a CAT scan or a satellite or a painting, it becomes an array of numbers to which the kit of signal processing tools can be applied."

Beyond determining if a painting is really by a master or just a clever forgery, forensic signal processing can help art historians determine the sequence of an artist's work or deconstruct a painter's process by identifying which strokes went on first. "There are a lot of things I think [curators] can think of that would be impossible, but there are a lot of things we should be able to do," says Johnson. "Any time the art historians look at the image for the information they need, we should be able to help."

In a year or so, Johnson envisions teaching a new course at Cornell examining how others have approached using signal processing to authenticate art so students can infer a general approach to the problem. He hopes his interaction with the museum will eventually result in a textbook that combines art history with technical material. "I'm not an engineering professor just because I want to tinker with cool things," he says. "I'm an academic because I want to teach cool things." **GT**

This article from the spring 2008 *Cornell Engineering Magazine* is reprinted by permission. Robert Emro is a communications specialist in the College of Engineering.

The Sound of New Music

From instruments to software, students in Georgia Tech's Music Technology Group are designing a rhythmic revolution

By Leslie Overman

Photography: Gary Meek

When Frank Clark (at left) arrived at Georgia Tech in 2002 to serve as the music department's new director, he found a building — and a program — in need of a makeover.

Surrounded by residence halls on the west side of campus, the J. Allen Couch Building was built in 1929 and served as an elementary school before housing the Institute's music program. Since Clark's arrival, Couch has undergone a renovation, as has music at Georgia Tech. What once served as merely a creative outlet for students has evolved into a program that combines both their technical expertise and their passion for music in an effort to prepare them for some of the top technical positions in the music industry.

In 2006, Georgia Tech's master's degree in music technology was approved by the Board of Regents. The first degree will be awarded this spring.

At 12, Mark Godfrey started playing music. He now plays the guitar and piano and sings. He's been in several bands of the "weird rock variety" over the years, he says, and is currently a member of two. He also produces music out of a home studio.

In May, Godfrey, EE 05, MS ECE 06, will receive the first master's degree in music technology from Georgia Tech.

"I learned a good deal of digital signal processing and pattern recognition in ECE and was always looking for ways to combine them with my passion and love for music," Godfrey says.

It was after he enrolled in classes taught by music professor Gil Weinberg >>>

Mark Godfrey combines his passions for math, science and music as a master's student in the Institute's Music Technology Program.

that Godfrey decided to stick around campus to study music technology. "I was particularly interested in machine listening — having a computer understand music so that it can improvise with you or recommend songs to you, et cetera. There aren't many schools that are really focusing on this artificial intelligence side of music technology, and since I was around when it was starting, I just jumped into it," Godfrey says.

"Surely my passion for music would have survived at another school," he adds. "I'm just not sure I would have had the opportunity to combine it with my passions for math and science. For that, I feel lucky I was in the right place at the right time."

Godfrey ultimately hopes to land a job in the field of computational music analysis or information retrieval but may pursue a PhD first.

When he decides to enter the work force, Godfrey believes his training at Tech will give him an advantage over other job applicants. "Most candidates for music technology positions will usually have experience on just one side — they have traditional music training and are self-taught hackers on the side — but I have solid expertise on both sides of the art-science fence."

Music's Move to the Mainstream

Georgia Tech may not be known for music, but its hell-luva engineers have been making it on campus for more than a century. The oldest student organization on campus, the Men's Glee Club was founded in 1906. The Georgia Tech band, now celebrating its centennial, was formed by 14 students in 1908. Today, about 2,400 students participate in the music department's instrumental and vocal ensembles each year.

Despite this rich tradition of musical performance, it has just been in recent years that music has become part of the academic rigor at Georgia Tech.

"Prior to 2001, the department functioned as a service organization," Clark says. "There had been some projects but no sustained research in music and technology. There were no tenure-track positions in music, facilities were in desperate need of improvement and almost 40 percent of music's budget came from the Student Government Association. It was an inappropriate and unsustainable scenario."

Clark recalls that then College of Architecture Dean Tom Galloway and Tech's provost Jean-Lou Chameau formulated a strategic plan to move music into the academic mainstream at Georgia Tech.

"We realized that students from every major, every college and every discipline on campus were participating in our classes and ensembles," Clark says. "We asked if we could combine the current majors and interest areas with music. For example, if you're an electrical engineer and you love music, is it possible that you could combine those in some way? If you're a computer scientist and a musician, how do you artistically and aesthetically integrate music and technology?"

A key component of the strategic plan was to attract leaders in music technology as tenure-track faculty. In 2003, Weinberg, just one month after earning his PhD from the Massachusetts Institute of Technology, joined Georgia Tech as director of music technology. Charged with designing the curriculum and hiring faculty for the new program, he met with leaders of industry to find out what skills graduates should possess.

Only a few universities in the United States have music technology programs, most of which train students to become engineers who work in the studio with mixers and technical equipment, Weinberg says. He found that Tech students have the technical know-how to do much more.

"When I came here, I tried to design a program that would be right for Tech but also unique if you compared it to other leading programs in music technology," he says. "We want to focus on inventing new enabling tech- >>>

You Should Be Dancing

Freeman takes audience participation to next level

Jason Freeman has seen some phenomenal concerts, but the most memorable musical moments of his life have been when he was performing, not watching others perform.

"There are great shows I've been to, but if I think about the truly transformative music experiences of my life, they've all been making music and not listening to music," he says.

With that in mind, Freeman, an assistant professor in Georgia Tech's Music Technology Group, dreamed up Flock, a one-of-a-kind musical experience that forces concertgoers out of their seats and into the action.

In Flock, the movements of dancers and audience members generate electronic sound, real-time video and a musical score for a saxophone quartet. As audience members, coerced and corralled by professional dancers, move across the floor of the performance space, an overhead video camera captures images of their movements for analysis by computer vision software, which calculates their locations. Based on that data, the software then generates music notation, which is read by the saxophonists on wireless displays mounted atop their instruments.

"You have no idea what's going to happen every night," Freeman says. "One night, people broke out into ballroom dancing during the middle of a show. Another time, people were running in circles all around."

Flock not only provides a unique concert experience for its guests, it also tests the improvisational mettle of the professional saxophonists. "It's an adventure for them," Freeman says. "It's something different than what they usually do. They're not just going and playing a bunch of jazz standards or doing the normal shtick. It's a chance to kind of explore themselves and push themselves in a new way. Musicians are always looking for a challenge."

In December, Flock — commissioned by the Adrienne Arsht Center for the Performing Arts in Miami — premiered in five performances. Before going on tour, Flock had three test runs at Georgia Tech. Students "were totally into it," Freeman says. "They're used to more interactive contexts, because they use YouTube and Facebook and they go to dance clubs. They took to it."

When the show hit the road in Miami, it met with a bit more resistance from older audiences. "There's always a struggle getting older people involved, but we set it up so that from the moment they walked in they had to actually cross the stage in order to get to the seats that they sat in while they were waiting for things to start," Freeman says. "As they did, they could see on the video a dot representing them moving across and they could hear the sound that was going on. From the beginning, we encouraged this environment of exploration and showed them this was not going to be a typical concert."

The typical concert experience is exactly what Freeman is trying to avoid. Despite the popularity in recent years of social networking sites and multiplayer online gaming, both of which bring communities of people together, concert performance "is still the same old stuff," Freeman says.

"When you go to see an orchestra, you sit in your seat and you never talk to the person next to you unless you came with them. You don't talk or do anything during the show. You have a cough drop in your mouth so that you don't cough. There's no engagement going on there, either peer to peer within the audience or between the audience and the people on stage," he says.

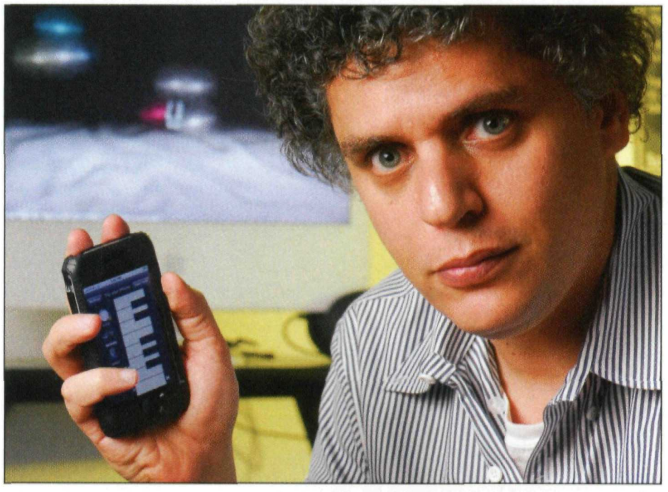
"That doesn't really interest me anymore. My interest is in using technology to break out of those boundaries and to invite the audience to be involved in some way in shaping music and performance."

Freeman admits that it is risky pairing professional musicians with unrehearsed individuals to make music, but it's a risk he's willing to take.

"You're taking risks in performance, and the chances of those paying off makes it worthwhile and it makes the path to performance that much more exciting. ... It's not always perfect, and it's not always horrible, but it's the magic of those moments where things do come together and they really work that makes the whole thing worthwhile." — *Leslie Overman*

Photo: Stanley Leary

nology. Our students will be able to create the music players of the future, the recording studios of the future, the musical instruments of the future. Georgia Tech being an engineering university, we have students with the skills to invent this technology, not just use such inventions."



Gil Weinberg and his students are exploring ways to compose music using today's technology to help more people "get immediate access to the expressive and creative aspects of creating music."

The Beat of a Different Drummer

One musician to come out of Tech's Music Technology Group has a name recognized across the globe. During a world tour in 2006, the drummer Haile performed to crowds in Israel, Paris and Germany. Haile's had airtime on CNN and the Discovery Channel and has been covered by the *Atlanta Journal-Constitution* and *PC Magazine.*

Haile is not your average drummer — it's a robot. A robotic percussionist designed by Weinberg and Scott Driscoll, MS ME 05, MS Arch 07, Haile listens to the music of live players through microphones installed in their drums, analyzes it in real time using perceptual models and through algorithmic processes plays along in an improvisational fashion.

"I thought that this can really enhance the whole idea of computer-generated music, because now we can have computer-generated acoustic sound," Weinberg says. "There's nothing that can replace the richness of acoustic sound."

While studying at MIT, Weinberg had designed software and musical instruments that helped novices to learn, play and compose music. When he arrived at Tech, he realized he could take his research a step further with help from students in the mechanical engineering department.

In its first incarnation, Haile was no more than a metal arm attached to a two-by-four. A wooden frame of a body was later constructed for it in the Institute's Advanced Wood Products Laboratory. The anthropomorphized Haile provides its bandmates with the visual cues that are so important in improvisational music.

In addition to enhancing the work of its fellow musicians by providing accompaniment, Haile also creates music that you may never hear from humans, Weinberg says.

"When humans play, they don't tend to process genetic algorithms. They don't think about fractals or calculate cellular automata," he says. "But genetic algorithms, fractals and cellular automata can produce interesting and sometimes beautiful aesthetical results, especially when they are shaped by humans' expressive input. Robots can also pull out simple fun tricks such as playing a motif 10 minutes after it was first introduced by a human, just in reverse, or even just play very, very fast.

"My interest was to see how my music would sound if I interact with such a device and if it can lead to the creation of new music that cannot be created by traditional means."

Students now are reprogramming the robot to have it play as they would like and, in the process, are gaining a better understanding of how they themselves play and compose music.

As for bands composed entirely of robotic musicians, Weinberg sees them perhaps as experiments.

"Some reporters ask me, 'Why build a musical robot at all? Do you want to replace musicians?'" Weinberg says. "My answer is that robots will never be able to create music the way humans do. They can enhance humans' music but never replace. The big promise is for robots to collaborate with humans. The sparks that I want to create can happen when humans bring what they're good at — emotions and expression — and robots bring what they're good at — processing power and mechanical abilities. These sparks can then lead to new music."

And the Beat Goes On

This is a great gesture," Weinberg says as he drums a beat on the top of his desk with his fingers. He then lifts his left hand and presses his fingers against the imaginary frets of an air guitar, the fingers of his right hand strumming the strings. "All of these gestures are defined by the instruments we play. How about this gesture?" he asks, squeezing his hands as if to clutch some invisible object. "It's also very expressive, but we just don't have the instruments to play it." >>>

Photo: Michael Schwarz

Band Celebrates Centennial

Tech musicians marking 100th with performance in Macy's Thanksgiving Day Parade in New York

The Georgia Tech band was formed by a group of 14 students in 1908. Now 350 members strong, the band is celebrating its centennial.

This year also marks another milestone moment for the band — it will be marching in the Macy's Thanksgiving Day Parade Nov. 27.

"The Macy's parade will be the most fitting way for the band to celebrate our centennial anniversary in front of 50 million viewers, as well as an opportunity for the students to shine as ambassadors for the Institute," says Chris Moore, associate director of bands and director of athletic bands.

The Georgia Tech band is one of just two college bands in the country selected to participate in the event. To apply, the band had to submit an application along with video and audio material and photos.

The band hopes to raise $500,000 to cover the cost of air, hotel and food expenses, as well as a concert hall rental fee. To date, it has raised about 20 percent of its goal, Moore says. Donations made to the Georgia Tech Foundation may be sent to Andrea Strauss, director of bands, at the Georgia Tech Music Department, 840 McMillan St. N.W., Atlanta, GA 30332.

The Alumni Association is planning a trip to watch the parade and celebrate Thanksgiving in New York. Band fans who can't make it to the Big Apple may participate in centennial festivities on campus. A concert and reception will be held at 8 p.m. April 10 at the Ferst Center for the Arts. The band also is planning a banquet for alumni on Oct. 23 during Homecoming.

Before joining Georgia Tech, Weinberg designed a musical toy that allowed youngsters to make music by doing just that — a stuffed ball swathed in colorful conductive fabric that produces different musical notes when squeezed.

With his students at Tech, Weinberg continues to create instruments that will allow people to compose music in new and innovative ways and give people who may not have had the patience to learn to play an instrument earlier in life a second chance at making music.

"I want people to get immediate access to the expressive and the creative aspects of creating music, because often, the early stages of learning focus too much on technique. In the beginning it is often difficult to just produce the right tones, and learners can't see how expressive and fun it can be to play and compose music," Weinberg says.

"We let them into the fun aspects of making music — the creativity, the expression — then later, when they see how great this feeling can be, they will go back and do work on the technique, theory and the formal aspects of music."

Beatbugs allow people young and old, with little or no musical training, to become part of a band. The digital musical instruments, which fit in the palm of your hand, allow players to record live music. The pitch and timbre of the recorded material then may be changed by bending the Beatbugs' antennae. Players also can send sounds from one Beatbug to another, creating a musical network.

"You don't have to be proficient in music theory to understand the rhythmic manipulations," Weinberg says. "You can change the rhythm by just exploring new gestures. You can then share it with other people through the network."

But practice does make perfect, even when it comes to Beatbugs. Even though they have an immediacy to them that brings music to the masses, Beatbugs are complex enough that a player must practice to become a pro, Weinberg says.

Mastering the Mix

At first glance, Flou looks like a computer game. Using a keyboard or a joystick, a player navigates a ship through space. It's not much of a game though. There's no gun to shoot and no bullets to dodge — in fact, there are no foes to be found. You can't score points, ascend to the next level or win. And there's no "Game Over," because you can't lose.

Commissioned by New Radio and Performing Arts Inc. for the Networked Music Review research blog, Flou was developed by Jason Freeman, an assistant professor in the music department, and eight students enrolled in a networked music course that he taught during the fall semester.

When they received the commission, Freeman says he and his students asked, "What does networked music really mean? How would the kind of piece that we might do as part of that exist on the Web? How would people collaborate with each other?"

In Flou, players fly through a 3-D environment encountering clusters of stars and other objects, which when flown through add loops and sound effects to a music mix.

"It's almost like you're a DJ, accessing an interface in the form of a game," Freeman says. "As you fly through these things, you get better and better, and you mix together your own things. You're forming your own version, your own remix, of this composition represented by all these different layers."

Players also have the option of creating their own worlds and sharing them with other users.

A live version of Flou is being developed and will premiere in New York. It also will be performed at the music department's Listening Machines concert April 24 at Eyedrum in Atlanta. To create a mix, visit http://www.jasonfreeman.net/.

Making Sense of Music

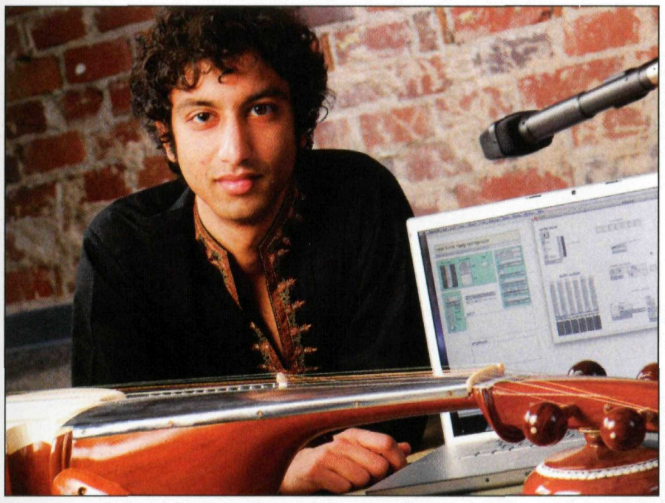
Thousands of albums were released in the United States in 2007, yet many songs will never make it across the airwaves of your local radio stations. So how will you find out about them?

Music discovery Web sites, like Last.fm and Pandora.com, are in the business of creating customized radio streams for visitors by evaluating their favorite songs and culling play lists of similar tracks.

Godfrey, whose master's thesis is focused on content-based music recognition, finds that the standard algorithms used by most recommendation Web sites are biased toward chart-topping music. "Almost all recommendation or discovery services … base their recommendations on meta data, typically explicit tags applied by users — Metallica can be accurately tagged as heavy metal, for instance — or collaborative filtering — User A likes songs X and Y. If user B likes song X, he will then like song Y.

"These algorithms are limited in that popular songs, movies and books will by nature have more data associated with them — more tags, more ratings, more listens — so these are likely to be the recommended items. This leads to a nasty feedback issue of popular items getting more popular, while under-the-radar items never make it out of obscurity," he says.

Godfrey and students in assistant professor Parag Chordia's course on computational music analysis are strip-



"We have increasingly the ability to access any music at any time, anywhere," says assistant professor Parag Chordia, who, with his students, is developing software to make sense of music.

ping songs to their bare essentials to improve music recommendation applications.

"What we're trying to do is create machines that can listen and learn when they listen to music," Chordia says. "It's kind of similar to speech recognition except rather than working on speech, we're working on music and trying to do things like extract melody or infer the beat or figure out what type of music it is, all for a variety of different types of applications.

"We have increasingly the ability to access any music at any time, anywhere. So we have this type of situation where we're inundated with musical information," Chordia says. "People are increasingly interested in basically creating tools that will help them make sense of all of this music.

"One of the approaches that we're working on here is analyzing the actual content of the music to understand what makes this music tick. What is the real structure of this music? What are the characteristics that give it a certain feel? … We're trying to create some kind of model that recreates how we as humans relate to music, and if we can successfully do that and start to build these models of songs, we may be able to say, 'If you like this, I know other music you will like.'"

Another music information retrieval application that may benefit from an improved song model is audio fingerprinting. If you've ever had a song stuck in your head for days but can't quite place it, wouldn't it be grand to simply hum a few bars into your cell phone and have the title sent to you in a text message? That's now made possible through audio fingerprinting.

"Audio fingerprinting has become very robust, and it relies on the same kinds of technologies, where we rip apart a song and look at its fingerprint," Chordia says. "We figure out what about it doesn't change even when we have noise, even when we take a random section of it. Despite all of these transformations, what remains the same?

"The essence of what we're doing is called pattern recognition. We're trying to find out what are the essential qualities and those things that really don't change irrespective of all the different kinds of variations and permutations. … That's what music information retrieval is all about."

Just the Beginning

Clark believes that the future of Georgia Tech's music program lies in its interdisciplinary approach to performance and education. "We are not a program that is or should be bound in a disciplinary box or put in some institutional silo," he says. "When I realized that we have every major on campus represented in our classes and ensembles, I saw that there was a connection between students' interests and music. I couldn't help but believe that some of those same interests were shared by faculty in other disciplines. That's proven to be true, and I've seen more support for music by my colleagues at Georgia Tech than at any previous institution."

Clark envisions a myriad of possible collaborations with colleagues from across campus — from working with materials science researchers to improve the quality of a piano's sound by replacing the traditional felt on its hammers with nanomaterials to working with College of Architecture and mechanical engineering professors to construct buildings with superior acoustics.

He also sees interest in a new undergraduate degree in music and the potential for dual-degree programs, particularly to coincide with the College of Computing's new threads platform.

"I believe for music to succeed at Georgia Tech, we need to partner with every college on campus — we need to be looking at the major research themes and directions of the Institute. We are just at the beginning of that process and the possibilities are endless," Clark says.

"Five years ago, our facilities were in total disarray, the budget was a disaster, we were seriously understaffed and the idea of a degree of any kind in music seemed remote. Presently, there is an interdisciplinary graduate degree, performance opportunities have expanded, facilities continue to improve, community involvement is growing and we are actively pursuing commercial and entrepreneurial partnerships. I am extremely proud of what our students and faculty have accomplished and I can't wait to see where we are five years from now." **GT**

Classical Expressions and All That Jazz

Guthman Keyboard Competition improvises its future

By John Dunn

Richard Guthman struck the right chords 10 years ago when he endowed the Margaret A. Guthman Keyboard Competition at Georgia Tech — artistic classical expression on one hand and a blue note for jazz on the other.

It also embraces a wide-open future that may raise some eyebrows — electronic instruments.

"I don't know of any other competition that under one roof has both classical and jazz," says Frank Clark, director of Tech's music department.

Guthman, IE 56, a member of the Alumni Association board of trustees, endowed the keyboard competition in honor of his wife, Margaret. The two categories are classical and jazz/contemporary in two divisions: high school and college. The awards offer a $5,000 grand prize in honor of the late College of Architecture Dean Thomas Galloway and $10,000 in additional awards.

The 10th competition was held in February and attracted nearly eight dozen musicians from across the country.

"The caliber is unbelievable," says Margaret Guthman, who is a pianist herself. "I'm exuberant. These kids are such high-quality musicians. It blows me away when I hear them playing — they are so good."

The competition was Richard Guthman's surprise to his wife. "I knew nothing about it until it was done," Margaret says. "It's been so much fun. We've seen this grow from four to nearly 100 young musicians."

In 2007, the competition was cov-

Richard Guthman, opposite page, endowed the Margaret A. Guthman Keyboard Competition in honor of his wife. One thing that's noteworthy about the Tech-based competition is that in addition to the classical vein, there's a category for jazz pianists from across the country as well.

ered by Georgia Public Broadcasting, which televised the event in four programs, two in August and two in September.

Clark says the competition has attracted "phenomenal musicians."

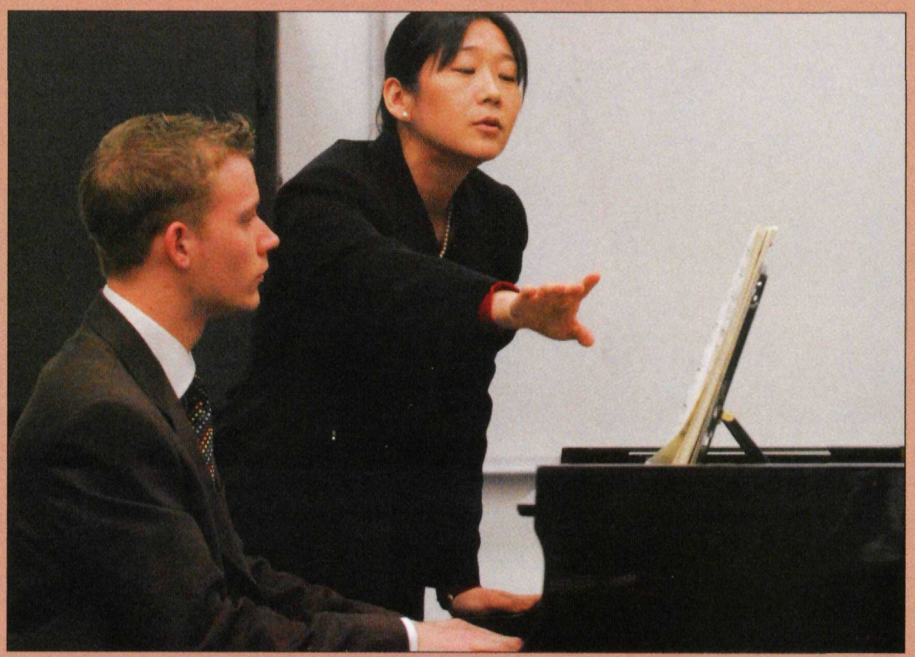
"Richard Guthman thinks in very large terms," Clark says, observing that he did not restrict the competition to just classical piano. "The unique feature about our competition is that it not only combines classical and jazz, the jazz portion also is structured differently."

Jazz competitors must improvise, he explains. "Jazz piano is not one of those everybody's-got-one kinds of things," Clark says. "It's relatively rare to find a high-level jazz keyboard competition. One of the things that makes ours really exciting and unique is not only do we have great judges, but in addition to playing solo piano, you have to play as part of a trio. The jazz folks do three tunes, and two of those are with a trio. We have a professional bass player and a professional drummer, and they are part of the judging and performance process.

"The kids have to come in and show that they can improvise and work in real time with real jazz players. And then they do a solo. Regionally, there is no competition that brings those elements together."

Clark says the competition is looking to a future that also embraces electronic instruments.

"If you look at the Yamaha roster of performing artists, there are classical folks and there are a few jazz folks, but the majority are either in pop or rock or techno or doing other sorts of things. They're playing other sorts of stuff. My question is, 'Where's the competition for them? Where do you learn to craft a career in that?' And that would be an ideal way to expand what Richard and Margaret envisioned for a keyboard competition — not just one style of piano playing but really embracing a full range of keyboard expression." **GT**



Shaping Sales

Jennifer Matullo strategizes Victoria's Secret business spikes

By Kimberly Link-Wills

Keeping Victoria's Secret ahead of industry curves is the job of former Georgia Tech volleyball star Jennifer Matullo.

As manager of business commercialization for Victoria's Secret Direct, Matullo, ME 97, outlines strategy for all company products — bras, panties, sleepwear, swimsuits, clothes and the teen-focused Pink line — sold on the Web and through catalogs.

Working at Victoria's Secret headquarters outside Columbus, Ohio, took some getting used to for Matullo, who joined the company in 2005 after a stint at Nike and receipt of a Harvard MBA.

"Every other word you hear around here is bra or panties," she says. "I have a lot of male coworkers and we talk about bras and panties all the time. It's just how daily conversation is. It's business."

Matullo says Victoria's Secret employees become desensitized to the sexy wall-size images from the catalogs and photographs of winged "angels" from the televised "Victoria's Secret Fashion Show."

"Working here you get to see the untouched photos. You get the behind-the-scenes look that the models are not as perfect as they appear," Matullo says. "When I first started here, I thought my self-image was going to be terrible. Really, it hasn't been that way at all. There are definitely real people working here. We don't have models walking around."

Self-assurance shouldn't be an issue for Matullo. On the volleyball court in 1995, she helped the Tech volleyball team win its first ACC tournament title. In Tech's record books, she ranks 10th in assists with 716.

Matullo scored a job with Nike upon graduation. "I basically was the person in charge of taking a shoe from a picture on a piece of paper and making it into a shoe," she says. "I worked with the designers, I worked with marketing on some of the colors they wanted to do, I worked with factories directly. I was the one who communicated how we wanted the shoe put together and I worked with them on the mold drawings for the different parts of the shoe."

Matullo always has thrived with many things on her to-do list. "During the volleyball season especially, I had a lot on my plate. It was like going to school full time and having a part-time job with the amount of hours we were required to put in with volleyball. It really allows you to juggle priorities. I tend to do better when I'm busier — the more overwhelmed I feel, the better I tend to do. My best grades were always during

the volleyball season because I just couldn't let anything slip — ever.

"The teamwork of playing a sport was huge for me too," Matullo says. "I tend to do really well on things I'm able to work as a team on."

Matullo maintains strong ties with several of her former Tech teammates. Four of them surprised her at a recent bridal shower in Ohio and are expected to attend her April 27 wedding at Disney World.

She met her fiance after relocating to Ohio to take the job with Limited Brands, which owns Bath & Body Works in addition to Victoria's Secret. The company has sold off The Limited, Express, Abercrombie & Fitch and Lane Bryant.

"Clothing for retail is much more volatile, a much tougher business. With intimate apparel, we certainly have people chipping away at market share, but there are really not a lot of people who play in the stuff that we do and the way we do it," Matullo says.

"I've worked on the five-year overall business plan for Victoria's Secret Direct. At the category level, we look three years ahead. I've worked with the bras team to look at its three-year plan. I've worked with Pink and panties and intimate sleepwear.

"We're very driven by the fashion industry," she says. "With footwear we hit the same thing. You'd hit peaks and valleys all the time. There'd be times when sneakers were really cool and everybody wore sneakers with everything. Then there were times when teenagers weren't wearing athletic shoes as much."

In addition to researching industry trends toward pajamas and nightgowns, Matullo studies the competition. "When I'm doing competitive research, I'm mainly looking at what other Web sites are selling, what are their market strategies, how's their business doing compared to ours."

Matullo also has a hand in a current project updating the Victoria's Secret Direct Web site. "How do you make it as easy to shop online as in the store? How do you get the color swatches across? You try to give as many conveniences as you can," she says. "It's also about conveying our brand messaging. The photos are in the same sexy and sophisticated brand message that we try to build everything on. You'll see the models in the clothes versus seeing a picture of just the bra itself."

Matullo's engineering degree and ability to multitask do factor into her work at Victoria's Secret Direct.

"Engineering provided the base of what I did at Nike. The work was very project management heavy. My engineering still comes into play quite a bit. For the last six months I've been working at our new distribution center. We had some startup issues. Since I have an engineering background, I got pulled into this process as a temporary assignment to help them get started," Matullo says.

"Our projects are very technical right now. We're talking about processing orders in our distribution center. It's not so much about what the customer sees but what happens behind the scenes, what it takes to get an order out the door. We're having to understand cycle times and how the machinery works, how to get from point A to point B. It certainly helps that I have an engineering background." **GT**

100 Facts and F

Tidbits of Tech information and trivia in honor of the Alumni Association's centennial

By Kimberly Link-Wills

01 Dean George Griffin, in his 1971 autobiography, "Griffin — You're a Great Disappointment to Me," recalled the assessment of Atlanta's first automobile given by John Saylor Coon, chair of mechanical engineering from 1891 to 1923. "Young men, I have just seen a machine to which they have harnessed many horses. It smells, runs like hell and they are going to give it to all the college students, women and delivery boys to drive. They are going to kill more people than all the wars in history."

02 Today, E.M. Jackson's original *Saturday Evening Post* illustrations fetch upward of $10,000 at auction. Elbert McGran Jackson, Arch 16, also illustrated the covers of *Collier's, Good Housekeeping* and *Cosmopolitan* magazines. According to *The Artists' Bluebook*, Jackson was "known for his illustrations of glamorous, seductive women." Jackson produced dozens of illustrations for the *Blueprint (below)* during his years at Tech. The Augusta, Ga., native also was the staff artist for the *Yellow Jacket* and a performer with the Marionettes. As an alumnus, he created the frontispiece for the 1925 *Blueprint* with the subject "American youth using knowledge to guard civilization."

03 Joseph Napoleon "Indian Joe" Guyon, Cls 19, was born on the White Earth Reservation in Minnesota in 1892. A Chippewa Indian, he played for John Heisman at Tech in 1917 and '18 before joining friend Jim Thorpe as a professional football player for the Canton Bulldogs. Inducted into the Pro Football Hall of Fame in 1966, Guyon died in 1971.

04 According to senior class statistics in the 1919 *Blueprint*, 72 percent of them smoked; 99 percent cursed; 15 percent chewed tobacco; 85 percent drank; and 92 percent gambled.

05 Football and athletic relations with the University of Georgia resumed in 1924. The rivalry was suspended in 1916 because of what President M.L. Brittain called "fever-heat tension" between the two schools. In March 1924, the *Technique* advised students to "uphold their own honor and reputation, as well as that of the school, under what may prove to be trying conditions. … Let us show our supporters and our knockers that we are gentlemen, true to our word, under any conditions, and that ill will is not harbored here after forgiveness has been granted."

06 On Dec. 19, 1928, 49-year-old bandleader Frank Roman "died suddenly before noon at his offices on the campus," the *Georgia Tech Alumnus* said. "His death was the result of a heart attack." In addition to directing the Georgia Tech band for 14 years, Roman ran a barbershop in the YMCA, now the Alumni/Faculty House.

07 Roy Evans attended night school at Tech in the early 1920s. In 1931, he bought what became the American Bantam Car Co. and led a team in the design of the Jeep for the military.

08 Arnold F. Willat, EE 1907, stood the hair-styling world on its end with his 1932 invention of a cold permanent waving solution. In 1981, Willat, then living in San Rafael, Calif., was inducted into the Cosmetology Hall of Fame. Willat, who also invented a telephone cord coiler, died in 1988 at age 102.

09 The 1934 counselors at Camp Tate for Boys in the Blue Ridge Mountains of Georgia included Bobby Dodd, a Tech assistant coach as well as the camp instructor of "field sports, fishing, woods games and tumbling," according to a

Feats, Triumphs and Tragedies

brochure, which includes a photo of him "with a long squirrel rifle of the vintage of 1835."

10 In 1937, the year he graduated with a chemistry degree, Ashworth Stull founded American Resinous Chemical and conducted the research to plasticize polyvinyl acetate, which became white glue. Stull sold his company to Borden in the mid-1950s. His invention became Elmer's Glue-All.

11 When Charlie Yates, GS 35 *(below)*, won the British Amateur in 1937, *Atlanta Constitution* editor Ralph McGill said his "infectious good humor and complete indifference to pressure … won the hearts of the Scots." Yates later said Bobby Jones, ME 22, gave him his "lucky, red flannel, long-john underwear" to take to the golf tournament, which he won using an old, rusty putter he had bought for $1.

12 Gerald "Red" Murray, ChE 39, developed the O-Cel-O cellulose sponge in 1946. He sold the patent to General Mills a few years later.

13 Russell Bobbitt, IM 40, played the first post-World War II tennis match at Wimbledon in 1945. "The Queen Mother, bless her heart, was just a great tennis fan," he told the *Atlanta Journal-Constitution* years later.

14 The first game played in the South by a Naval Academy football team took place at Grant Field on Oct. 21, 1943. Tech won 17-15. "Tech's slim margin of victory was gained from the toe of freshman Dinky Bowen," the *Alumnus* said. "Converting after both touchdowns, Bowen supplied the final edge when early in the fourth quarter he calmly booted a perfect placement from the Navy's 20-yard line."

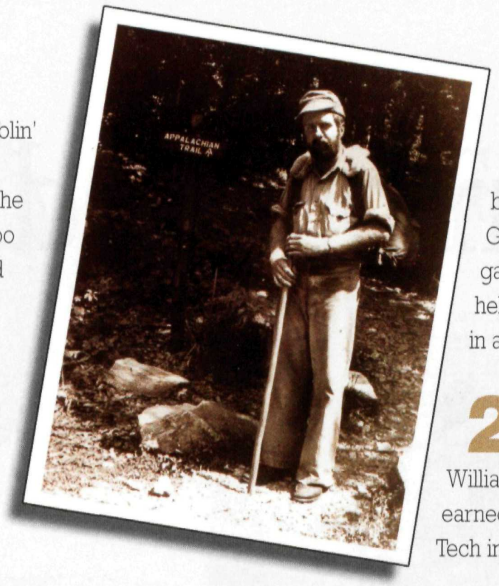
15 Alumni in Charleston, S.C., met at Henry's Restaurant on Market Street on Nov. 10, 1943, to form a Georgia Tech club. "With Lt. W. Len Shipman serving as toastmaster in the absence of Ed Vinson, who has just become the father of an 8-pound boy, thanks were extended to Joe Dillard, '39, for his efforts in getting the group together. Mr. J.H. Egan, (18)93, spoke briefly of his student days at Tech in the era before paved streets," the *Alumnus* reported. "Following these talks an informal 'bull session' was held. … Mr. J.A. McCormack, (19)03, … told an entertaining story of the three Charleston boys in school at that time. Mr. McCormack was known in those days as 'Monkey.'"

16 *Atlanta Journal* sportswriter O.B. Keeler reported on the "Homecoming Smoker" of Nov. 26, 1943, at the Naval Armory. "It appeared that the late arrivals … were inserted with a shoehorn, and the estimate was at least 1,500 good old alumni and friends and Navy and Army and Marine trainees and guests of the Tech Athletic and National Alumni associations. And, with a lively boxing card, pictures of the Tech-Tulane football game, free cigars and cigarettes and no speeches whatever, two of the liveliest hours ever spent in the famous building finished at 10 o'clock."

17 In December 1944, Henry Lee Plage, IM 37, defied orders as captain of the USS Tabberer and turned around the destroyer escort to rescue 55 survivors of Typhoon Cobra. He was awarded the Legion of Merit and hailed in the book "Halsey's Typhoon."

18 The Casablanca Club in Havana was the site of a Georgia Tech alumni dinner attended by 32 people on Dec. 22, 1944. "Attractive gold and white lapel badges were >>>

made for the party, and the music of 'Ramblin' Wreck' was given to the club's orchestra, which played it well," the *Alumnus* said. "The alumni and their ladies made quite a hit too by singing the famous song, accompanied by the musicians."



19 Hazard Reeves, ME 28, was a co-founder in 1946 of Cinerama and developed its stereophonic sound system. Reeves netted millions when he sold out, but he blamed Hollywood for Cinerama's demise. "That group fouled up one of the most gorgeous concepts," he told *Tech Topics* just months before his death in 1986.

20 In 1948, Paul Jones Mitchell Jr., ChE 38, developed a way to stabilize the taste and texture of peanut butter. Before he received a patent, the process fell into public domain.

21 Ed Negri, ME 47 *(below)*, took over the family business, Herren's Restaurant, 84 Luckie St., Atlanta, soon after graduation and remained in the front of the house until the establishment famous for its sweet rolls shuttered in 1987.

22 Junior's Grill opened as a North Avenue burger joint in 1948. When its location was acquired for development prior to the 1996 Summer Olympics, Junior's moved onto campus and into the former location of the Robbery between the Administration and Carnegie buildings.

23 J. Calvin Jureit, CE 49, revolutionized the home-building industry in the 1950s with the Gang-Nail, a connector plate made of galvanized steel with nail-like prongs that held together two adjoining pieces of wood in a roof truss.

24 Tech awarded its first PhD, in chemical engineering, to William Lloyd Carter in 1950. Carter had earned a bachelor's in chemical engineering at Tech in 1944.

25 S. Bradford "Skeet" Rymer Jr., IM 37, took charge in 1950 of Dixie Foundry, the company his father founded in 1917. Eight years later, the company bought and changed its name to Magic Chef. Sales grew to more than $1 billion annually. Magic Chef merged with Maytag in 1986 and Rymer became chairman of the executive committee of the board of trustees.

26 On Sept. 30, 1951, Eugene Espy, IM 50 *(above)*, reached Mount Katahdin in Maine and became the second person to hike the entire Appalachian Trail in a continuous thru-hike.

27 S. Alton Newton, ChE 48, MS ChE 49, was named a Rhodes Scholar while pursuing graduate studies at MIT in 1951. Other Tech-produced Rhodes Scholars are Will Roper, Phys 01, MS Phys 02, and Jeremy Farris, IntA 04.

28 Marilyn Monroe wore a Georgia Tech sweater on the Sept. 9, 1952, cover of *Look* magazine.

29 President Dwight D. Eisenhower painted a portrait of golfer Bobby Jones and presented it to him in a ceremony at the Augusta National Golf Club in 1953.

30 Ed Sullivan required the Glee Club to sing "heckuva engineer" when it performed "Ramblin' Wreck" on his "Toast of the Town" television program in 1953.

31 Reginald S. Fleet, ME 16, was a founder of Rocket Chemical in 1953. In 1970, the company name was changed to WD-40.

32 Robert B. Wallace Jr., IM 49, became editor of the *Georgia Tech Alumnus* in 1953. In his 17 years at that post, Wallace also traveled with the football and basketball teams, served as the coliseum announcer for basketball, covered campus issues under four Georgia Tech presidents and served as faculty adviser to the staffs of the *Technique* and *Rambler*. He died in 1970 at the age of 48.

33 The faculty senate gave the ax to the *Yellow Jacket*, the student body's 50-year-old humor magazine, in May 1955. The *Yellow Jacket* staff anticipated its fate, and the cover headline of the final issue, which went to press before the faculty vote, read RIP.

34 The *Rambler*, the "official feature magazine of the Georgia Institute of Technology," debuted in October 1956. The fashion section contained advice for Tech men in the photo captions: "If the braided band (on a Lee Hunt Club hat) isn't rakish enough for the gay blades, it can be dressed up with brushes like a Tyrolean"; "For the sportsman, the Skol coat with toggle leather buttons and turn-up collar is the latest thing. The four-eyelet, black pebble-grain shoes are the first black tie-ups to ring the college fashion bell"; and, "Sheen cotton slacks and desert boots keep the man casual, comfortable and still well dressed. Ready for action!"

35 Burt Reynolds turned to acting after he blew out his knee in his sophomore year playing for Florida State in a mid-1950s gridiron game against Georgia Tech, according to the Burt Reynolds Museum.

36 Students marched on the state Capitol to protest Gov. Marvin Griffin's demand that Tech refuse to play Pittsburgh in the 1956 Sugar Bowl because Pitt had a black player. Tech did play the football game and defeated Pitt 7-0.

37 Tech hired its first female faculty member, math instructor Mary Katherine Cabell, in 1960.

38 "Tech alumni have a new scapegoat for their football ticket frustrations. It is an electronic digital computer located in Tech's Rich Electronic Computer Center," said the *Alumnus* in October 1961. "The computer was called in to help with the tough job of making the decisions on who gets the best season tickets this year by Athletics business manager Bob Eskew. … Before the computer, it took Eskew and his staff six weeks to deal out tickets. This year, without fanfare, the computer parceled out all of the season tickets in 30 minutes, an average of over 900 ticket decisions per minute."

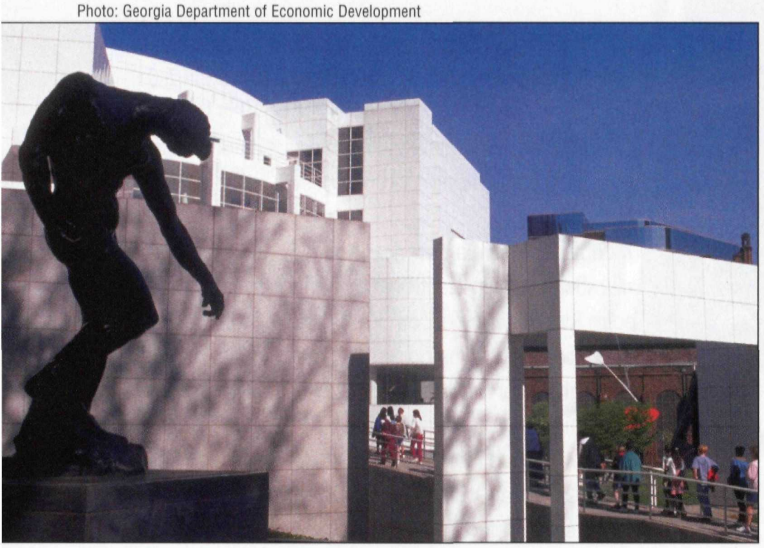
39 Lew Russell "Pete" Robinson, Cls 59, earned the nickname "Sneaky Pete" when he stunned the drag racing world by coming from virtual obscurity and winning the 1961 National Hot Rod Association nationals. He died during a qualifying race in 1971.

40 Fred Wolfe, EE 22, returned to campus Nov. 11, 1961, for a DramaTech production of "Look Homeward, Angel" based on the book written by his brother, Thomas Wolfe. He told students in remarks before the curtain was raised, "Tom said, 'You can't go home again.' Speaking objectively, that is true, because Georgia Tech is not the Tech of 39 years ago. But in spirit, I am home again."

41 Elizabeth Ziegler put seven sons through Tech and was named an honorary alumna in 1962. Her Tech men were W.T. Ziegler, ChE 32; C.W. Ziegler, ME 35; W.F. Ziegler, TE 39; W.H. Ziegler, ME 40; W.R. Ziegler, IM 41; John Ziegler, ME 49; and F.R. Ziegler, IM 50.

42 Six Tech alumni were among the 130 people killed in the June 3, 1962, crash of an Air France jet chartered by the Atlanta Art Association at Orly Airport outside Paris. The *Alumnus* identified them as Paul G. Barnett, Cls 22; D. Randolph Berry, ME 41, and his wife; Fred W. Bull, ME 33, and his wife, two children and mother; Thomas G. Little, Cls 35, and his wife; David G. Murphy, Cls 42, and his wife; and Vassar Woolley, ChE 17, chairman of the board of the Seydel Woolley Co. After the accident, Atlanta Mayor Ivan >>>

Photo: Georgia Department of Economic Development



Allen Jr., Com 33, headed to Paris to visit the crash site. In 2000, Pat Gupton Jr., Cls 47, told *Tech Topics* that he and his wife, Dot, had made reservations to travel with the Art Association group but were able to cancel and instead go on the three-week "First Georgia Tech Holiday in Europe," which consisted of 73 alumni and their families, ages 9 months to 82, departing for Rome on May 4.

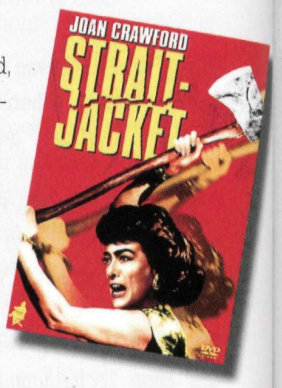
43 In his book, "Kim King's Tales from the Georgia Tech Sideline," the late quarterback great and 1968 industrial management graduate recounted when Bear Bryant tried to convince him to play football for Alabama during a meeting in 1962 in the coach's suite at the Georgian Terrace Hotel. "He was sitting by the window. You could see Grant Field from there. He was sitting with a pack of Chesterfields and with a pack of Benson & Hedges. He was chain smoking, smoking one from one pack, then one from the other. He kept looking out the window at the rain and saying, 'This is Dodd's weather.' … He said, 'Mrs. King, excuse my language, ma'am. But that damn Dodd's gonna beat my butt today.'" Bryant was right. Tech won the game 7-6.

44 When President John F. Kennedy was assassinated in Dallas on Nov. 22, 1963, Rufus Youngblood, IE 50, was riding in a limousine with Vice President Lyndon Johnson. When the shots rang out, Youngblood pushed Johnson to the floor of the car and shielded the vice president's body with his own.

45 John Boyd, IE 63, developed the Energy-Maneuverability Theory, which, according to the book "Boyd: The Fighter Pilot Who Changed the Art of War," did four things for aviation: "It provided a quantitative basis for teaching aerial tactics; it changed the way aircraft are flown in combat; it provided a scientific means for aircraft maneuverability and tactics design; and, finally, it became a fundamental tool in designing fighter aircraft."

46 In his 1963 Institute report, President Ed Harrison wrote, "The increasing pressures and demands of all aspects of technology for capably trained and educated personnel lead me to recommend that the present restrictions on women students … be lifted. At the present time, women are permitted admission to the undergraduate engineering schools, to architecture and to applied mathematics." Harrison speculated, "The number of women students attending engineering colleges will never be large in proportion to men students, if experiences in the past are any indication of the future."

47 Actress Joan Crawford got her friend, former Georgia Tech English professor Mitchell Cox, a part in the 1964 horror flick "Strait-Jacket." They became acquainted as vice presidents in the Pepsi Cola Co. Cox portrayed Dr. Anderson, who is found headless in a freezer.



48 David Arp, IM 64, and his wife, Claudia, are the founders of Marriage Alive International and co-authors of the book, "Fighting for Your Empty Nest Marriage." They present their "10 Great Dates" seminars around the world.

49 The editor of the *Technique* was ousted by the Student Activities Committee in 1964 for his part in what was called an "obscene and pointless" April Fool's issue.

50 The British invasion in the summer of 1965 was heralded with so much screaming from delirious young women that the Beatles couldn't hear each other on stage. When they performed at Fulton County Stadium that August, Duke Mewborn, Cls 56, set up a monitor in front of the stage that allowed the Beatles to hear themselves. Paul, John, George and Ringo appreciated Mewborn's work so much that they sent their manager to ask him to accompany them on the long and winding road as their soundman throughout the remainder of their American tour. Mewborn declined.

51 The Neely Nuclear Reactor at Georgia Tech was used for a photo shoot for a mink coat advertisement that appeared in a 1965 issue of *Vogue*.

52 James Dickey was Tech's first poet in residence in 1969. A year later, Dickey published "Deliverance."

53 For the 1969 *Blueprint*, student Bill Stanley *(opposite page)* was asked, "Who Are Your Heroes?" His answer: "Martin L. King Jr., because of his devotion to his cause and to his people; Malcolm X, because of his brilliant analysis of the strug-

gle; Julian Bond, because of his wit and cool; and John Portman (Arch 50), because of his pride and professional ability." In 1972, Stanley became the first African-American to receive an architecture degree at Tech.

54 Janis Joplin and the Kozmic Blues performed at Tech on Dec. 5, 1969.

55 Richard Kessler, IE 69, MS IE 70, got his start in the hotel business with Days Inn under the tutelage of Cecil Day, IM 58. The Kessler Collection now includes the Beaver Creek Lodge in Colorado; Casa Monica, Celebration and Grand Bohemian hotels in Florida; El Monte Sagrado in New Mexico; and the Mansion on Forsyth Park in Savannah, Ga.

56 Yitbos, an unidentified breed, was the 1970 winner of the first Homecoming Dog Contest. Entries were judged on talent, character and charisma. In 1971, the winner was Chai, a St. Bernard sponsored by Lambda Chi Alpha. Chai received a trophy and 90 pounds of dog food. In 1972, the competition was changed to the Homecoming Anything Contest. The rules stated entries had to be "alive and non-human."

57 Commercials for Mayfield ice cream feature a bow tie-wearing Scottie Mayfield. The president of Mayfield Dairy Farms received a Tech degree in general management in 1973.

58 The Summer 1973 issue of the *Georgia Tech Alumnus* was the final edition. Tough economic times were blamed for the publication's demise. The first issue of the GEORGIA TECH ALUMNI MAGAZINE was published in 1975.

59 During a press conference before he gave a lecture at Tech on Feb. 6, 1974, NBC newsman David Brinkley was asked whether President Richard Nixon would resign. "I expect him to serve out his term," Brinkley answered. "He won't resign. Why should he? Then he'd have to pay his lawyers' fees himself."

60 Rocky Reeves, IM 79, and Mike Nicholson, Cls 74, opened their first hole-in-the-wall pizza joint on Spring Street in 1974. Mellow Mushroom now is one of the top pizza companies in the country.

61 Hubert Lee, Cls 27, editor of *Dixie Business* magazine, sent a copy of his publication to President Gerald Ford and included an article clipped from the October 1974 *Tech Topics* describing Tech's 1934 9-2 football loss to Michigan. The president, a member of that Michigan team, wrote back. In his letter, Ford said, "I was especially delighted at the *Tech Topics* piece. Bobby Dodd may not consider that '34 Michigan-Tech game particularly noteworthy. However, I can assure you that to a certain Wolverine center, the one winning game of his senior year is indeed memorable."

62 Ronald Reagan, the former governor of California, would not say whether he was going to run for president when he spoke to about 250 people at Alexander Memorial Coliseum on April 29, 1975. He did say, "There is only one cause (for inflation) and that is the government continues to spend more money than it takes in. There is only one cure — a balanced budget."

63 With locations across central Georgia, Nu-Way Weiners, routinely touted as the producer of one of the best hot dogs in America, is run by cousins Spyros Dermatas, IM 76, and Jimmy Cacavias, CE 79.

64 Under the headline "Banner Lost" ran this news item in the September 1976 issue of *Tech Topics*: "When we last used our big expensive banner out at Aunt Fanny's Cabin last spring at the Greater Atlanta Georgia Tech Club meeting, it was left there. Some Tech person borrowed it from Pongo Poole for a Georgia Tech affair. He can't remember who borrowed it and for what. Will someone call Roane Beard or Bob Rice at the Alumni Office?"

65 In 1977, Lillian Carter, mother of President Jimmy Carter, Cls 46, was approached by members of a Georgia Tech fraternity and asked to donate a personal item for a celebrity auction. She asked for a pair of scissors, snipped the straps of her slip, stepped out of the undergarment, autographed it and gave it to the young men.

66 The Atlanta Touchdown Club and Delta Air Lines created an award named for Bobby Dodd. The first Dodd Award, presented in 1977, was given to University of Georgia head football coach Vince Dooley.

67 In March 1978, Amy Wepking, a junior from Beloit, Wis., became the first female elected president of the Georgia Tech student body. Wepking, ME 81, received 59.1 percent of the vote in a runoff election. The student body was made up of 1,485 females and 7,845 males.

68 Brooke Shields wore a Yellow Jackets football jersey in a photo that appeared in the Aug. 10, >>>

1981, issue of *People*. Actor John Travolta was pictured with the starlet.

69 A central character in the 1982 James Michener novel "Space" is aerospace engineer Stanley Mott, a graduate of Georgia Tech.

70 The Georgia Tech Hong Kong Club received its charter from the Alumni Association in 1982. Institute President Joseph M. Pettit was heading a delegation to China and made a detour to present the charter to club president Phil Weiss, ID 62, and founding member John C. "Jack" Portman III, Arch 71.

71 Ted Turner, then president and chairman of the board of Turner Broadcasting Systems and owner of the Atlanta Braves and Hawks, discussed innovations in communications as the luncheon speaker for Intersect '82 at the Student Center during Homecoming. "There's not one program on network television that really shows somebody in a normal, average career that's an exciting and challenging place to be," Turner said during his remarks. "Most of it's 'Love Boat' and 'Fantasy Island,' and it makes people feel like they're worthless." More than 25 years later, on March 31, Turner was at Tech to receive the Ivan Allen Jr. Prize for Progress and Service.

72 On tap for Georgia Tech Night at the Fox Theatre for Spring Sting weekend May 1-3, 1987, were performances by Bernadette Peters and Paul Anka.

73 In 1988, Charles Smithgall, GS 33, anonymously gave $3 million toward the establishment of the Ivan Allen College. The gift wasn't made public until 2007, when the late Smithgall and his widow, Lessie, were awarded the Ivan Allen Jr. Prize for Progress and Service.

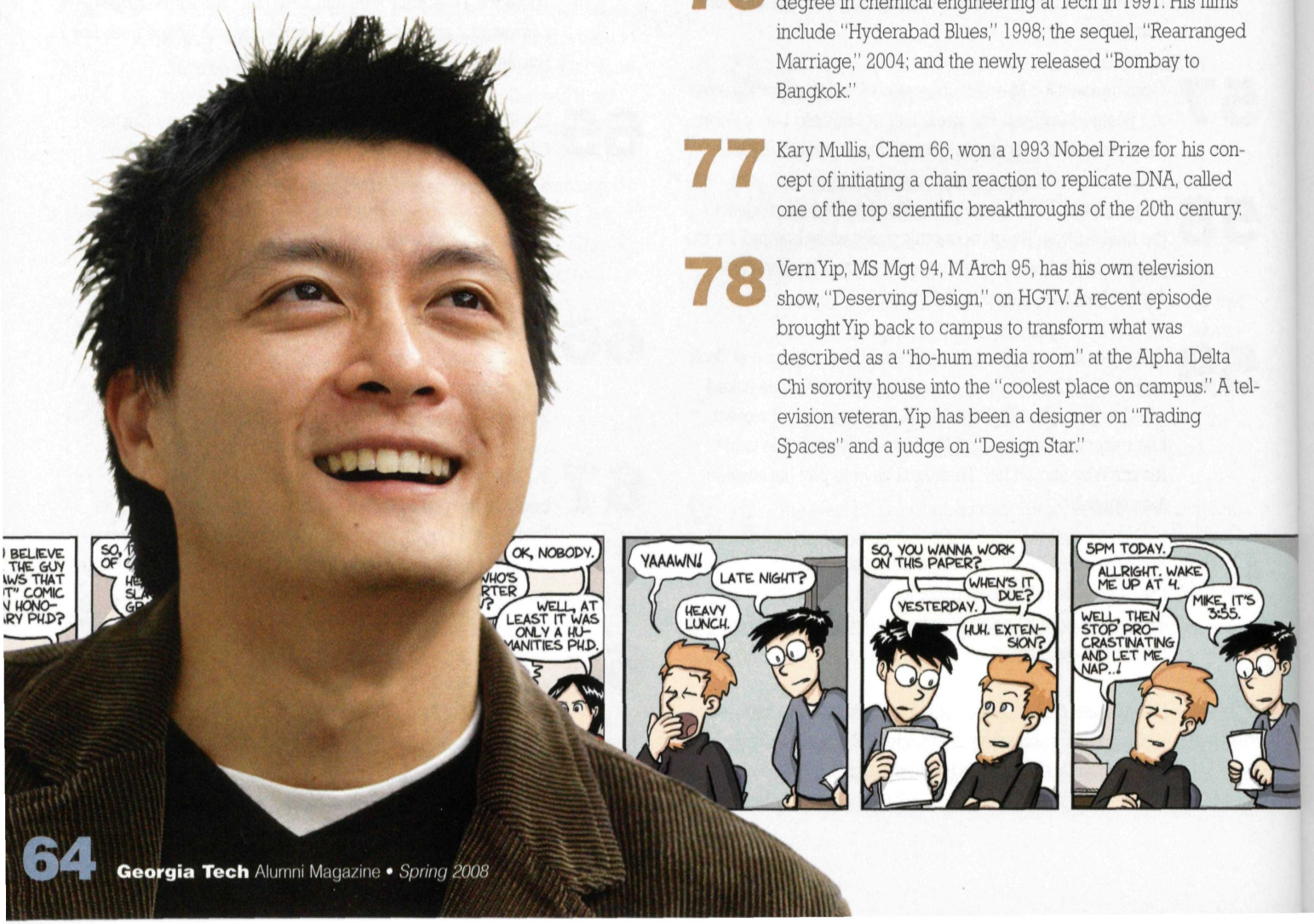
74 Riccardo Ullio, CE 90, MS EnvE 93, has earned fine marks in Atlanta dining circles for his restaurants Sotto Sotto and Fritti. Now he has opened the Brazilian-inspired Beleza and Cuerno, which earned four stars in March from the *Atlanta Journal-Constitution* for its Spanish cuisine.

75 The music video for Stevie Ray Vaughan's "The House is a Rockin'" was shot at the Chi Phi house at Georgia Tech in the summer of 1990, shortly before the singer's death in a helicopter crash.

76 Bollywood filmmaker Nagesh Kukunoor earned a master's degree in chemical engineering at Tech in 1991. His films include "Hyderabad Blues," 1998; the sequel, "Rearranged Marriage," 2004; and the newly released "Bombay to Bangkok."

77 Kary Mullis, Chem 66, won a 1993 Nobel Prize for his concept of initiating a chain reaction to replicate DNA, called one of the top scientific breakthroughs of the 20th century.

78 Vern Yip, MS Mgt 94, M Arch 95, has his own television show, "Deserving Design," on HGTV. A recent episode brought Yip back to campus to transform what was described as a "ho-hum media room" at the Alpha Delta Chi sorority house into the "coolest place on campus." A television veteran, Yip has been a designer on "Trading Spaces" and a judge on "Design Star."



79 On his blog, Mark Lee, Cls 95, guitarist in the Grammy-winning Christian rock band Third Day, tells fans he studied civil engineering and was a member of Tech's marching band.

80 Jorge Cham, ME 97 *(opposite page)*, chronicles "life or the lack thereof in academia" in the online comic strip "Piled High and Deeper." PHD products include calendars, mugs and books.

81 Ryan Stewart, Mgt 98, a former strong safety for the Detroit Lions, and his brother, Doug Stewart, are the hosts of "2 Live Stews," a nationally syndicated sports talk radio show.

82 In 2000, John Bland, MgtSci 83, left the software company he co-founded to serve as executive director of Amigos for Christ, a nonprofit organization dedicated to improving the lives of the people of Nicaragua.

83 Vivek Maddala, EE 95, won the Young Film Composers Competition in 2000 and was contracted to write the score for the modern-day release of the 1921 silent film "The Ace of Hearts" on Turner Classic Movies and a Warner Brothers DVD compilation of Lon Chaney movies.

84 Matt Smith, ID 01, was in the MTV "Real World" cast in New Orleans while a Tech student. He returned to campus and hosted "The Latest Dish" on the Georgia Tech Cable Network during his senior year. In 2003, Smith was part of MTV's "Real World/Road Rules Challenge: The Gauntlet." Now a resident of Phoenix, Smith maintains a blog at Supafly.com and directs the Internet ministry for Life Teen, an international Catholic youth organization.

85 Bucky Johnson, who retired from Tech in 2001 after 19 years as the band director, now is the mayor of Norcross, Ga.

86 Joe Baldassare, Phys 71, and his partner, Bill Bartek, competed as Team Guido in the first season of television's "Amazing Race" in 2001 and returned for the all-stars competition, which aired in 2007.

87 President George W. Bush came to Tech on March 27, 2002, to pay tribute to police, firefighters and emergency medical workers in response to the Sept. 11, 2001, terrorist attacks on the United States and to see a demonstration of technology that could detect chemical and biological weapons. Three Tech alumni perished on 9/11: Carl Max Hammond Jr., Phys 87; Mike Gann, IM 85; and Murray Greer Jr., IM 62.

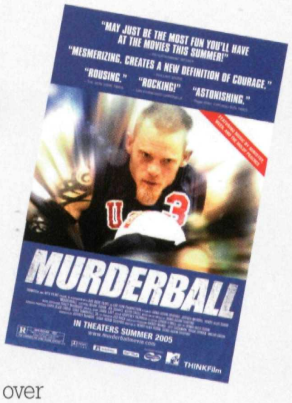
88 In April 2002, Robert Foley, a professor in the School of Industrial and Systems Engineering, and his talented toy poodle, Asa, appeared on "The Late Show with David Letterman." Asa, winner of the Purina Dog Chow Incredible Dog Challenge Eastern Regionals, showed her stuff on a steeplechase course set up outside the Ed Sullivan Theater.

89 Jimmy Carter, Cls 46, the only alumnus to serve as president of the United States, was awarded the Nobel Peace Prize in 2002 for his role in the 1978 Camp David accords as well as his "untiring effort to find peaceful solutions to international conflicts, to advance democracy and human rights and to promote economic and social development."

90 Georgia Tech-Lorraine launched the Georgia Tech Europe Alumni Association with a gala event in Paris on Dec. 3, 2003. The Georgia Tech-Lorraine campus opened in Metz, France, in 1990.

91 M. David Luneau, MS EE 81, recorded the first image of the ivory-billed woodpecker *(left)* in nearly 70 years with a video camera in the Big Woods of Arkansas in February 2004.

92 Mark Zupan, CE 99, starred in "Murderball," a 2005 Academy Award-nominated documentary about wheelchair rugby.

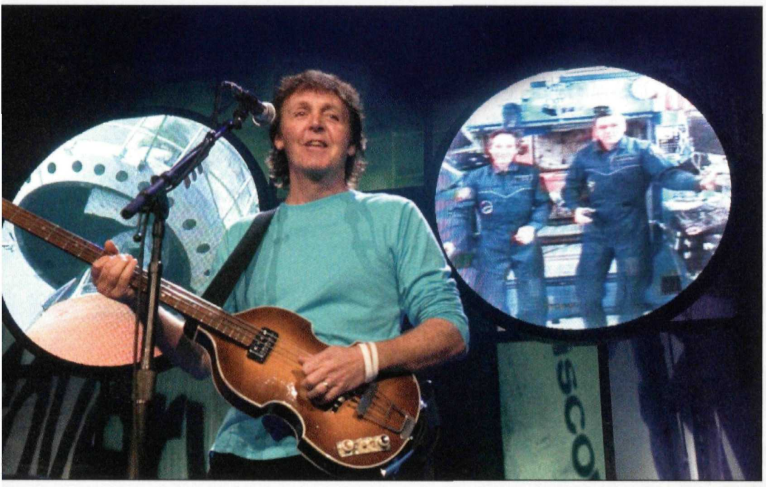


93 Best-selling crime author Kathy Reichs dedicated "Cross Bones," published in 2005, to James Woodward, AE 61, MS AE 62, PhD EM 67, to thank him for his help over the years with the novels she had set on the campus of the University of North Carolina-Charlotte, where he was chancellor. The television series "Bones" is based on Reich's life as a forensic pathologist by day and novelist by night.

94 In the wake of Hurricane Katrina in September 2005, the Institute temporarily housed 275 Tulane University >>>

students on campus. Alexander Memorial Coliseum served as a temporary shelter for nearly 300 evacuees.

95 Paul McCartney provided a wake-up call for International Space Station residents Bill McArthur, MS AE 83, and Valery Tokarev when his live performance of "Good Day Sunshine" was transmitted to the astronaut and cosmonaut in November 2005.



96 Ryan Gravel, Arch 95, M Arch 99, M CP 99, was featured in *Esquire* magazine's "Genius Issue" as one of the Best and Brightest of 2006 for his vision of the Atlanta BeltLine.

97 Mike Glad, IE 68, produced and co-wrote "Recycled Life," nominated for an Academy Award as best documentary of 2006.

98 Craig Forest, ME 01, and David Moeller, ME 02, won the New York City regional leg of the "American Inventor" television competition in 2007 with the Claw, a bicycle storage mechanism.

99 Clint Zeagler, ID 04, has his own clothing line, Pecan Pie Couture. His summer collection of T-shirts debuted in Bloomingdale's stores in March.

100 The women's tennis team won 21 straight matches in the NCAA tournament in 2007 to clinch the national title. **GT**

STEVE SALBU

INTERVIEW

Questions on Ethics

By John Dunn
Photography: Gary Meek

In the first hour of the first class on business ethics taught by Steve Salbu, dean of the College of Management, Georgia Tech students begin studying the social responsibility of business. It's a course that allows Salbu to draw from an astonishing array of modern-day incidents in which major businesses and corporations entered an ethical quagmire that embroiled them in scandal and fraud.

Economist Milton Friedman says the sole responsibility of a business with shareholders is to increase profits within the rules of the game. A flaw in that proposition, Salbu says, is the assumption that shareholders want to make a profit at any lawful cost.

"Profit is important, but it is not the only thing that attracts all investors," Salbu states. "And of course in the real world, companies can be punished by shareholders, customers and employees for a failure to act ethically." >>>

Salbu became the management dean and Stephen P. Zelnak chairholder in July 2006. He formerly served as associate dean for graduate programs at the McCombs School of Business at the University of Texas, which he joined in 1990. He was named its Bobbie and Coulter R. Sublett centennial endowed professor in 2000. He also served as director of the McCombs School Business Ethics Program and editor in chief of the *American Business Law Journal*.

A former editorial board member of *Business Ethics Quarterly*, Salbu has published extensively in the areas of business ethics and law. His articles have appeared in such journals as *Business Ethics Quarterly, Chicago Journal of International Law, Columbia Business Law Review, Harvard Journal of Law and Technology, Northwestern Journal of International Law and Business, University of Pennsylvania Journal of International Business Law* and *Yale Journal on Regulation*.

A native of New York, Salbu holds a bachelor's degree (psychology) from Hofstra University, a master's degree from Dartmouth College (liberal studies), a law degree from the College of William and Mary and master's and doctoral degrees from the Wharton School of the University of Pennsylvania (organization and strategy).

"People are shrewd assessors of character. We all recognize who the good people are in our organizations — the people who consistently exhibit character and integrity."

In our society, many people do not accept absolutes: a definite right and wrong. Do ethics have absolutes?

I teach that there are fundamental areas of ethics that do not vary across cultures. Aspirational values such as honesty, integrity and fair dealing, for example, transcend cultures. We should expect these qualities from ourselves and have a right to expect them from others, regardless of the context in which we are functioning.

You sometimes hear the argument that the ends justify the means. Is that valid?

You've just asked one of the most basic questions with which moral philosophers still grapple. Some philosophers believe that people have basic duties that are lodged in principle and can't be altered by means-ends assessments. Others are consequentialist and they embrace the ends as a legitimate justification of the means. I personally believe that there are some fundamental areas that should be non-negotiable — for example, equal opportunity of employment. To me, this is a basic right, and denying that right cannot be justified by the ends. But once you get beyond fundamental rights and values, we all routinely make utilitarian ethical decisions by trying to maximize good outcomes. And this is a legitimate model for making ethical decisions, provided you don't violate fundamental principles that you hold sacrosanct.

Critics say you can't teach ethics in college. If students don't have their values set by then, it's too late. How would you respond?

As you can guess, I strongly disagree on many levels. Our students are very smart. In all other areas, we credit them with learning what we teach them and applying their education to their work and to their lives generally. Why would ethics be any different?

The notion that our values are set by the end of our adolescence is an impoverished idea of human development.

Moreover, in business school, students spend a lot of time learning by doing, as when they do case analysis. If we leave ethics out of that analysis, our students are developing patterns of analysis to apply in the real business world that lack a critically important component.

It is sometimes said that being ethical will help lead to a successful business in the long run. Is that true?

It is true. People are shrewd assessors of character. We all recognize who the good people are in our organizations — the people who consistently exhibit character and integrity.

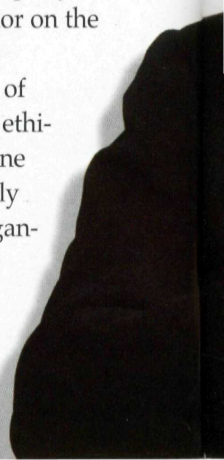
Likewise, people quickly get to know who the lemons are, and reputations develop accordingly. People who lack character are avoided — by peers, by collaborators, by suppliers and by customers. Opportunities abound for persons with reputations for character, and they shrivel for persons with bad reputations.

That said, we are human, and persons of character will be tempted to cut corners, and sometimes isolated lapses are tempting because they can provide substantial profit or gain. These are the cases when you do the right thing solely because it is the right thing and not with expectation that you will be enriched.

Does ethical behavior necessarily start at the top?

Yes. Pretty much all businesses talk the talk. Most people know the correct line to espouse as their value set. But members of organizations quickly distinguish between the party line and actual behavior on the part of leaders.

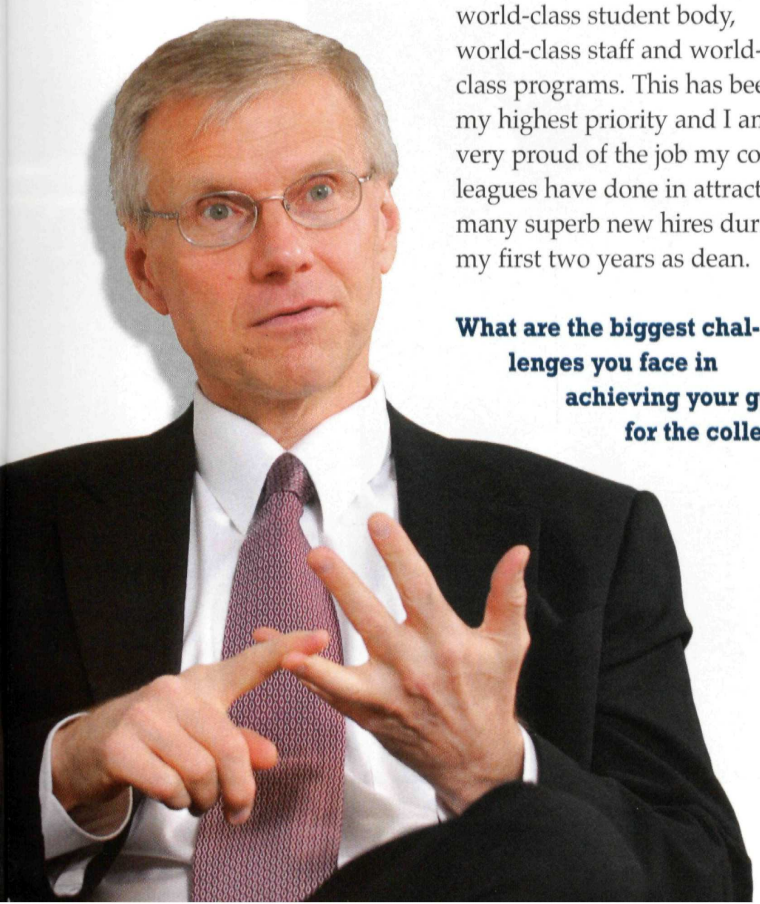
If the leaders of organizations cut ethical corners, the tone is set and it quickly permeates the organization. Leaders must not only proclaim, they



must also live the highest values they can.

Georgia Tech has a challenging problem concerning a couple of former employees accused of making personal charges on state-issued credit cards. The state has found similar instances of fraud on other college campuses. What should we learn from this?
No matter how much we try to build the highest ethical climate, we will never entirely eliminate bad people who try to do bad things. This is why effective internal control systems are a critical safeguard. We must continually reinforce our expectation of the highest ethical standards of behavior, but we must also have effective systems in place to deter abuses.

What is your vision for the College of Management?
Georgia Tech is a great institute that deserves a great business school. Building on the Institute's strengths, we aim to become the world's pre-eminent business school for management and technology within 10 years. We already are well on our way, with areas like operations management and quantitative analysis now ranked in the top 10, and other areas like information technology management and quantitative finance quickly rising within the top 20 as well.



What is your strategy for achieving this?
The key is to grow and develop a world-class faculty. Great scholars gain global recognition for their research and provide their students with the very best knowledge — knowledge which they often have created themselves. A world-class faculty provides the structure around which we build a world-class student body, world-class staff and world-class programs. This has been my highest priority and I am very proud of the job my colleagues have done in attracting many superb new hires during my first two years as dean.

What are the biggest challenges you face in achieving your goals for the college?
Far and away, the biggest challenge is resources, given the quickly escalating arms race among very well-heeled business schools. But this is a challenge I really enjoy working on.

I see my job as working collaboratively with faculty, students, alumni, staff and the business community to develop winning strategies, goals and initiatives. After that, my role is very much external: to build excitement about the direction of the College of Management and generate the resources that will allow all the very talented people in our building — students, staff and faculty alike — to thrive and succeed.

Ultimately, my success in this will depend on the commitment and the generosity of our alumni and friends. But no university anywhere, bar none, has more loyal supporters than Georgia Tech.

You have won numerous teaching awards. What makes a good teacher?
Great teaching comes in many shapes and colors, but there are some attributes that I think are fundamental. Knowledge is obviously very important. Organization is critical. An ability to read an audience is very helpful — it distinguishes those who are responsive to student learning. Respect for students is basic but essential.

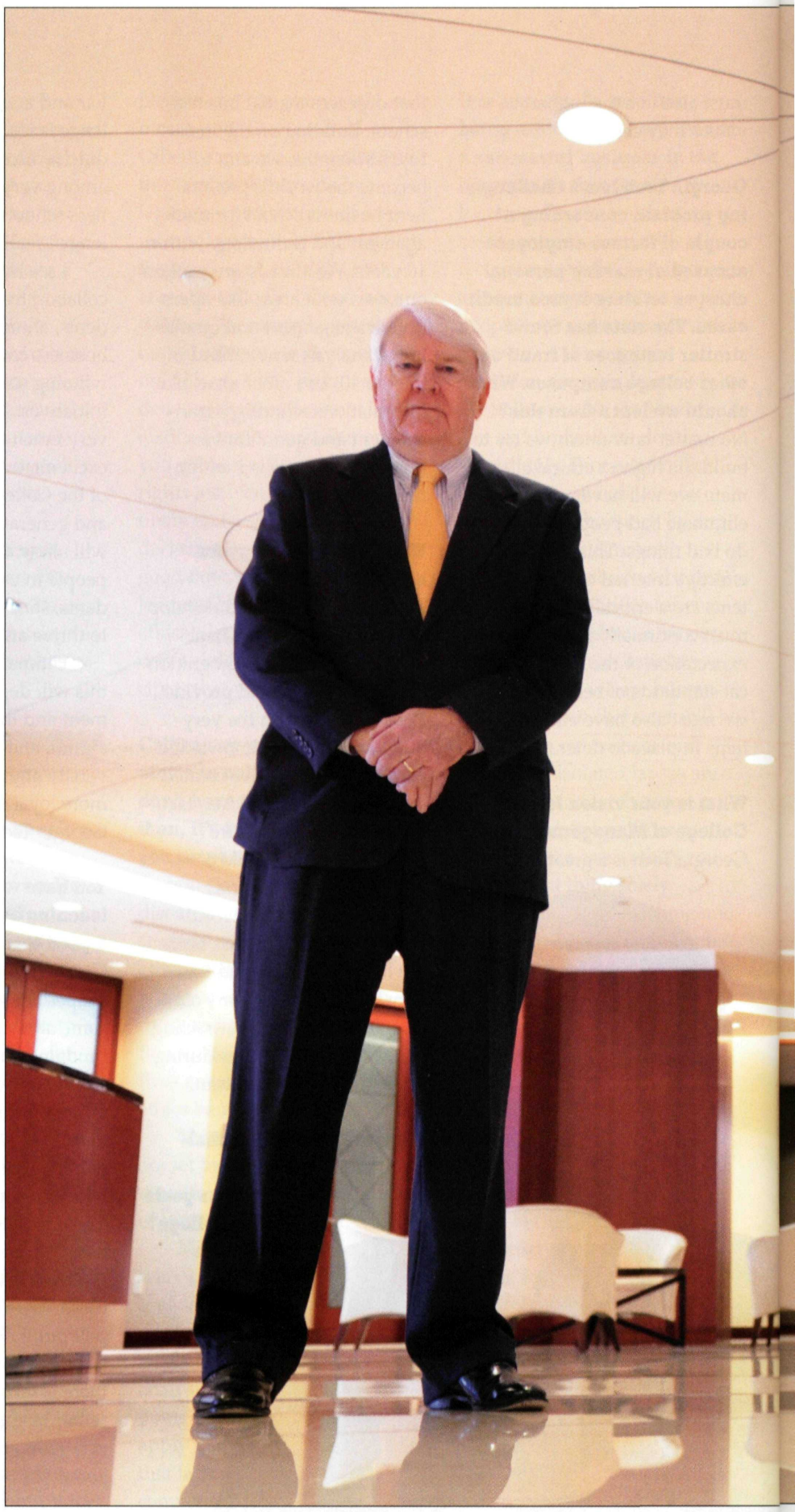
And if you have all of those, love for teaching is what will put it over the top. Students always know when there is no place you would rather be than with them in the classroom. If you're passionate about your subject, it shows. And it is infectious. **GT**

"We aim to become the world's pre-eminent business school for management and technology within 10 years. We already are well on our way, with areas like operations management and quantitative analysis now ranked in the top 10, and other areas like information technology management and quantitative finance quickly rising within the top 20 as well."

Supreme Court Triumph

Oscar Persons brings engineering approach to the practice of law

By Gary Goettling
Photography: Stanley Leary



If Lyman Hall hadn't been so cold and drafty, the Atlanta legal community might have been denied the contributions of one of its most distinguished litigators, whose recent U.S. Supreme Court victory is widely regarded as the most important securities law ruling in a generation.

"I wanted to be a chemist," says Oscar Persons, a 1960 industrial engineering graduate. "I was very interested in science and started out in chemistry. But when I did those six-hour labs in the winter in the old chemistry building, that was enough for me — I switched to industrial engineering after the first year."

But an engineering career wasn't in the cards either for the Columbus, Ga., native. After graduation and a two-year tour of duty with the Navy, Persons joined Southern Bell's management training program while working toward a law degree at night.

"I'd always had a bent for things that weren't just engineering," says >>>


EXIT

Persons, who was elected student body president while at Tech and worked as sports editor for the *Technique*. "Emory law school had an excellent night program with the same faculty as the day classes, so I went there two nights a week. Then I quit my job at Southern Bell and went full time to finish my last year and graduated in 1967."

A senior partner with Alston & Bird in Atlanta and past chair of the firm's litigation practice, Persons specializes in securities litigation at the trial and appellate levels, in particular defending companies in class-action suits. His most recent case attracted national attention as Persons headed Scientific Atlanta's legal defense team in Stoneridge Investment Partners vs. Scientific Atlanta and Motorola. At issue was whether or not third-party vendors with no disclosure or reporting obligations to investors could be held liable for the actions of the primary violator of the law.

No Liability Under Law

The defense was bolstered by 15 amicus curiae briefs submitted by interested parties including NASDAQ, the U.S. Chamber of Commerce and the National Association of Manufacturers. The plaintiff's side included an equal number of amicus filings.

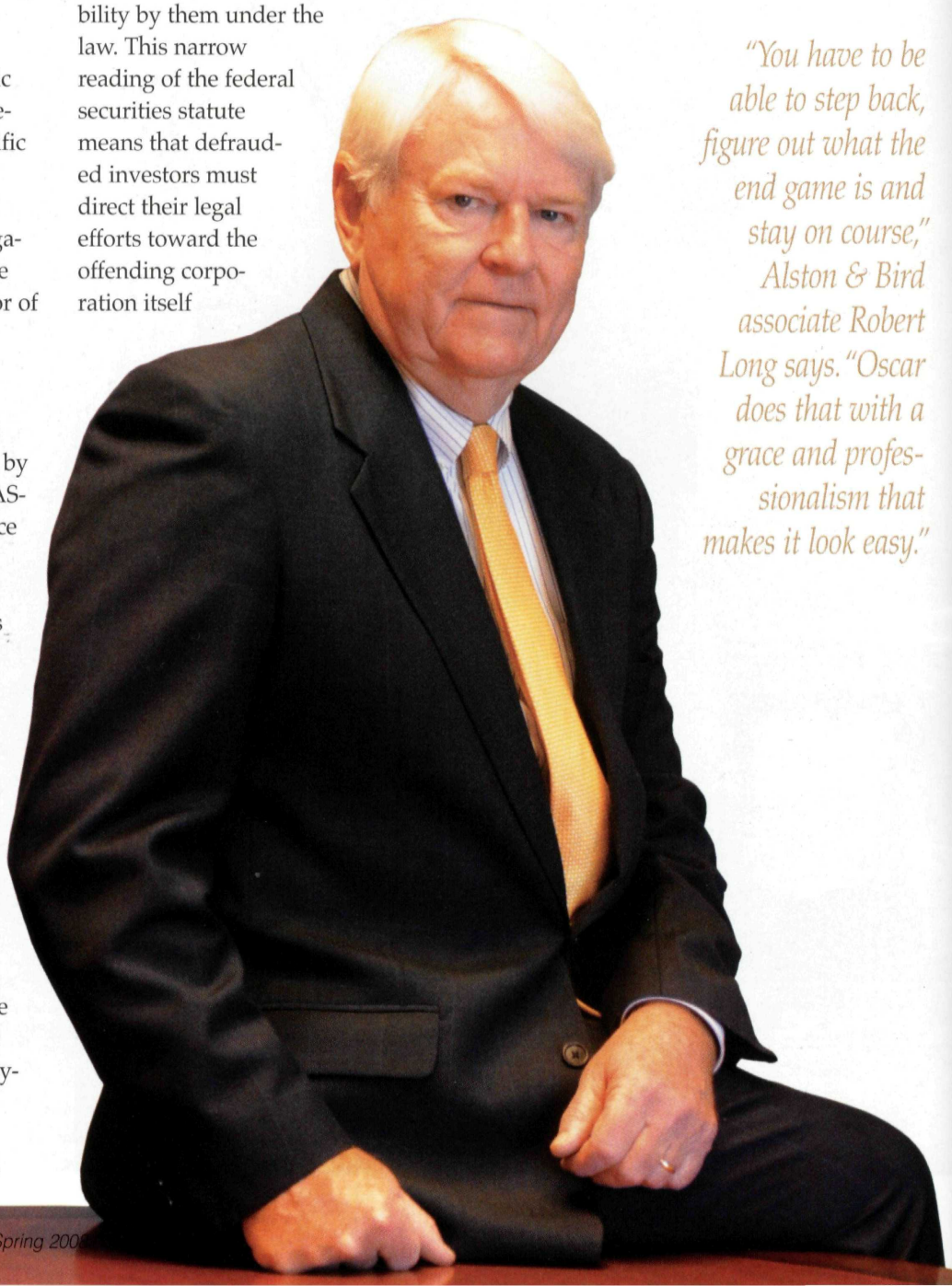
The case arose after investors in Charter Communications sued the cable TV company, arguing that it had fraudulently inflated earnings reports. After settling with Charter, investors filed a class-action suit against Scientific Atlanta and Motorola, charging the two vendors with aiding Charter's scheme to defraud. For its part, Scientific Atlanta was alleged to have sold digital cable boxes to Charter at inflated prices, then used the overpayments to purchase advertising on Charter's system.

The litigation began in 2003 and worked its way through the federal court in St. Louis, the 8th Circuit Court of Appeals and then to the Supreme Court. Along the way there were disparate rulings on the similar legal issue in different cases in the 9th and 5th Circuit Courts of Appeal. In a landmark 5-3 decision issued Jan. 15, the high court decided in favor of the defendants.

The court found that Scientific Atlanta and Motorola were too far removed from any investor deception at Charter to justify liability by them under the law. This narrow reading of the federal securities statute means that defrauded investors must direct their legal efforts toward the offending corporation itself and not third parties, even if they allegedly participated in the scheme.

Justice Stephen G. Breyer did not participate in the decision.

Siding with the majority, Justice Anthony M. Kennedy wrote, "It was Charter, not [Scientific Atlanta and Motorola] that misled its auditor and filed fraudulent financial statements. Nothing [the vendors] did made it necessary or inevitable for Charter to record the transactions as it did."



"You have to be able to step back, figure out what the end game is and stay on course," Alston & Bird associate Robert Long says. "Oscar does that with a grace and professionalism that makes it look easy."

"It was indeed a closely watched case," says Persons, who was counsel of record before the Supreme Court, where a specialist was retained to conduct the oral argument.

The case earned Lawyer of the Year honors for Persons from the securities regulation publication *Compliance Reporter.*

It didn't take long for the court ruling to be applied in a case with similar issues. Within days of its Scientific Atlanta decision, the justices dismissed a suit brought by former Enron investors against Merrill Lynch in which the plaintiffs contended that the firm was financially responsible to investors because it knowingly helped Enron falsify its financial position.

The class action against Scientific Atlanta alleging "scheme liability" embodied one of the major strategic theories attempted to be utilized by plaintiffs in securities litigation during his long career, according to Persons.

He notes that until the mid-1980s lawsuits were more difficult to be certified as class actions and thus not as common as now. Since then, the number of such actions has "exploded" in the courts, giving rise to law firms specializing in bringing securities class-action cases and further driving up the number of cases filed, he says. The ruling in Stoneridge is expected to limit the upsurge in securities class actions.

"If you have a suit that brings in a company that is not liable, you are punishing that company's shareholders and rewarding another company's shareholders," Persons contends. "That does not make sense, and it's bad for investors."

As with most securities litigation Persons handles, the Scientific Atlanta case was information-intensive and complex — challenges familiar to every Georgia Tech engineer.

"An attorney should gather and analyze facts, discard those that are irrelevant and then handle the remaining facts in a logical way, which is the same thing engineers do," he explains. "Doing the job right is 99 percent preparation — knowing what the case is about, knowing the facts and honing in on them — and that's why having an engineering degree has been helpful to me."

Reputation for Professionalism

After 40 years with Alston & Bird, Persons has become something of an icon to many of the firm's younger attorneys, including Tod Sawicki.

"I have immense respect for Oscar and consider him to be my mentor," says Sawicki, who has worked at Alston & Bird for the past 14 years. "He has taught me all of the best things about being a professional and a terrific lawyer. In the way he conducts himself — in the way he treats others, whether they're young or old, adversary or friend — he's just remarkable."

Ditto Robert Long, one of the firm's newest associates. He characterizes Persons as "a great teacher."

"He's a nationally known litigator and I'm a scrub," Long says. "He could simply say, 'Do this,' and I'd do it. Instead, he walks me through his thought process when he's making a decision, and that's really valuable for a young litigator."

Long echoes Persons' earlier observation regarding the virtues of preparation and focus, noting that it's easy for younger attorneys to get caught up in the day-to-day details of a case.

"You have to be able to step back, figure out what the end game is and stay on course," he says. "Oscar does that with a grace and professionalism that makes it look easy. So when I get caught up in a maelstrom during a case, I think, 'What would Oscar do?' and it helps me focus on what's important."

Persons is as generous with his time as he is with his knowledge. A member of the President's Advisory Committee on the Arts for The Kennedy Center, he served as general counsel to the Georgia Republican Party from 1971 to 1993 and was a member of the State Election Board of Georgia from 1976 to 1995. Persons also has been a lecturer at seminars on trial practice, appellate advocacy, securities litigation, corporate litigation and discovery.

He enjoys spending time with his wife, Virginia, two children and two grandchildren. Yellow Jackets sports is another favorite pastime and Persons is a longtime season ticket holder for basketball and football games. A self-described "struggling but enthusiastic" golfer, he is also an enthusiastic collector of wine — French reds to be exact.

He first became interested in wine back in the late '60s, when the young couples group at the church he attended sponsored a wine tasting. Persons had never been to a wine tasting before. In fact, Atlanta at that time was pretty much a Bacchic backwater. Just about the only labels available on local restaurant menus were Mateus and Liebfraumilch, according to Persons. At least the former offered the extra benefit that "you could stick a candle in the bottle neck," he jokes.

At the wine tasting, Persons tried a beaujolais for the first time. He was impressed. "I had never had anything like that before," he says. "I started reading a lot of literature on the subject. That way you can become pretty knowledgeable about which wines are good in which years, and those are the ones I try to get."

Persons draws a distinction between the collectors for whom vintage wine is typically an investment and his approach to the hobby.

"I'm not interested in collecting bottles of wine just to sell them at some point. Over time, my family and I will drink every bottle that's there," he laughs. **GT**

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25 Years Ago

Georgia Tech became one of only nine universities in the country to offer a doctoral degree in architecture effective with the winter quarter beginning in January 1983. Architecture Dean William Fash said it would emphasize history, technology and urban design with "literally dozens of specifics" within these areas.

50 Years Ago

Fraternities, which have been an integral part of the Tech campus since 1888, were featured in the March 1958 alumni magazine. Atlanta bandleader Bill Clarke, who had played Tech dances since 1934, noted that fraternities had changed a great deal but "the big change is the death of the stag line at all dances. Going steady killed it."

75 Years Ago

Newly elected President Franklin D. Roosevelt was featured writing a greeting to Georgia Tech in a photo with Institute President Marion L. Brittain that appeared in the March-April 1933 *Georgia Tech Alumnus*. Brittain had met Roosevelt, then governor of New York, in Warm Springs, Ga. While president, Franklin and Eleanor Roosevelt visited the campus and attended football games at Grant Field.

100 Years Ago

Forty alumni in New York City met at Murray's restaurant on 42nd Street on March 7, 1908, to form a satellite Georgia Tech Alumni Association — and announced their purpose March 18, 1908, in the *Atlanta Constitution*. A resolution stated, "The object of this association is the promotion of social intercourse among the graduates of the institution, the promotion of their professional welfare and the extension of the knowledge of the school and its advantages. That we lend a helping hand to all graduates and students of the institution who come within our reach." GT

Eye for Innovation

Retired Control Data chief Robert Price likes what he sees happening at Tech

By Sarah Banick

In the 1960s, Control Data Corp. built the fastest computers in the world. As one of the world's most respected firms, it pioneered the age of computing using innovative methods that addressed social responsibility, employee welfare and the environment years before these actions became common corporate philosophy.

The company's former chairman and CEO, Robert M. Price, MS Math 58, once described CDC as "the Apple computer of its time." The Minneapolis-based corporation launched more than 100 spin-offs before restructuring and merging itself into a new direction in the early 1990s.

Price joined CDC in 1961 as a mathematician staff specialist and followed a steady path up the corporate ladder. He became president and chief operating officer in 1980 and chairman and CEO in 1986.

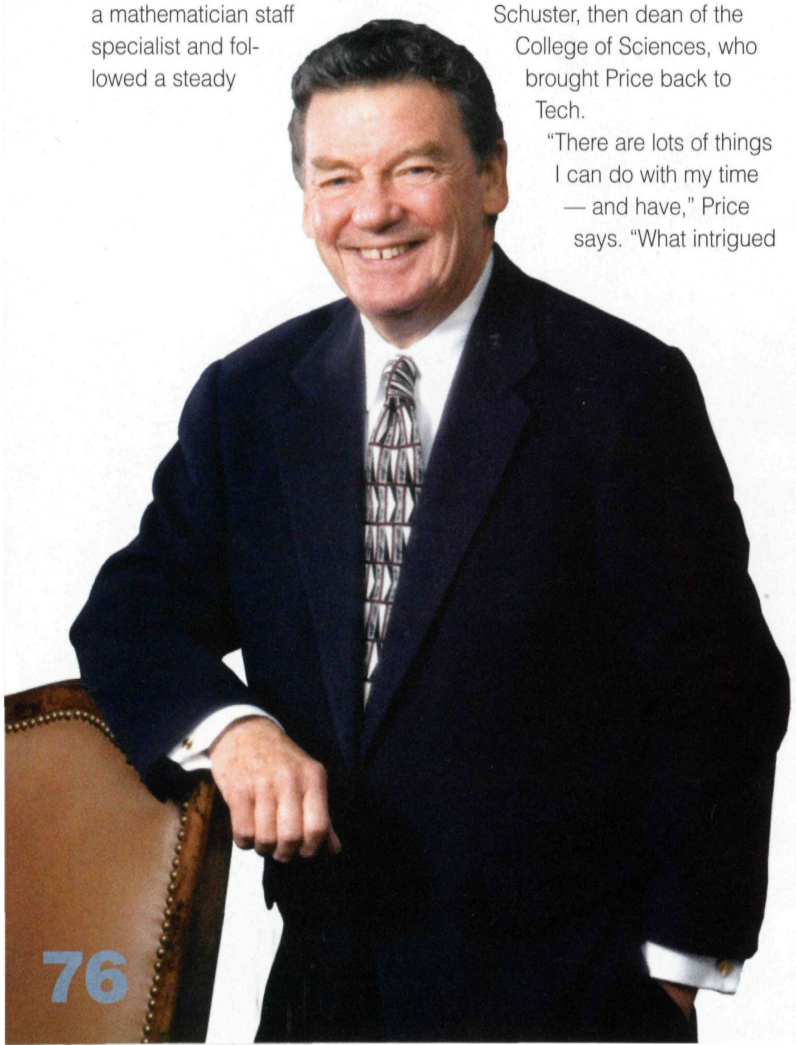
In 1990, he retired and set his own life in a new direction. He's now president and CEO of PSV Inc., a consortium of consultants specializing in technology commercialization and corporate strategy. He's also an author, professor, entrepreneur and volunteer.

Now the College of Sciences at Georgia Tech is benefiting from his experience.

During his years with Control Data, Price's main connection with Tech was following athletics.

It was Tech Provost Gary Schuster, then dean of the College of Sciences, who brought Price back to Tech.

"There are lots of things I can do with my time — and have," Price says. "What intrigued me during our conversation is that Tech 'walks the talk' of interdisciplinary activity. I have been involved with half a dozen academic institutions as a student or professor, and Tech does more rather than just talk about being an interdisciplinary school."



Price believes interdisciplinary activity is the key to a successful business. "Breaking down the silos in business is absolutely essential in beginning any kind of truly productive organization. And breaking down the silos in business is child's play compared to breaking down silos in an academic institution," he says, citing the reinforcing practice of peer review.

"It is different [at Tech] and that gives me a sense of pride in what's going on. Georgia Tech is training better scientists, executives and leaders," Price says.

His satisfaction was demonstrated recently with his gift that created the Robert M. Price Jr. graduate fellowships in science.

In 2005, Price published the well-reviewed book, "The Eye for Innovation" (Yale Press). "Bob Price eloquently tells a story of innovation and entrepreneurial leadership in the competitive environment of technology," said former Chrysler chairman Lee Iacocca.

Price says, "Innovation is all about meeting need in a new and more productive way. At the root of any robust business is a high degree of innovation. I was very fortunate to be a member of Control Data, the most innovative organization I have ever known. People worked together to solve problems. All companies say this, but few do it.

"We treated the employee as a whole person. You don't leave your problems at home when you go to work. If those problems distract your attention, your focus and your energy, you simply can't be as productive," Price says. "Control Data pioneered confidential employee advisory resources. It was a worldwide service. Employees could call a hotline. We could give them emergency help or direct them to counseling services where they lived. This was in the 1960s."

Control Data was global before global was cool. "We called it 'international,'" Price says. "The initial product thrust of Control Data was high-performance scientific computers. The first computer Control Data made, delivered in 1960, was seven times faster and cost half as much" as the competition. By 1961, Control Data was exporting computers to the United Kingdom and Israel.

While still at Control Data, Price founded a nonprofit, the National Center for Social Entrepreneurs (www.missionmoneymatters.org), dedicated to helping other not-for-profits improve their sustainability by increasing their earned income capacity.

Now that he's "retired," Price devotes more of his time to this passion, encouraging organizations to innovate by taking a more strategic approach to today's marketplace.

Price doesn't believe in slowing down. He still hikes and fishes when he can. He also blogs regularly on www.eye4innovation.typepad.com to continue the thought processes he presented in his book. **GT**

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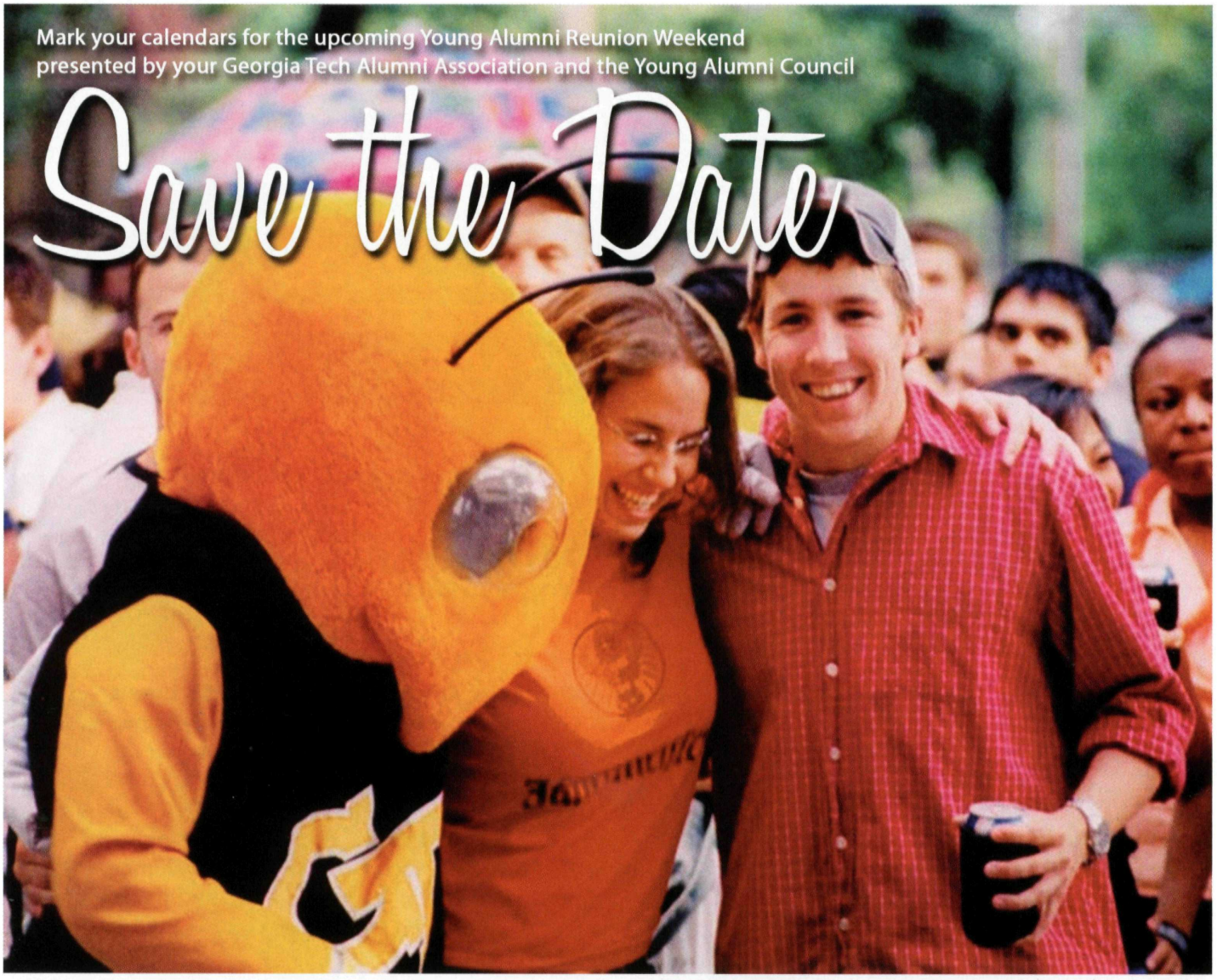

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Economic Powerhouse

Study shows China is moving ahead of the United States in technology development

By John Toon

The chart inset in the photo of a Chinese factory shows the change in standing of selected nations from 1993 to 2007 as calculated in a study of technological competitiveness conducted by Georgia Tech researchers.

A new study of worldwide technological competitiveness suggests China may soon rival the United States as the principal driver of the world's economy — a position America has held since the end of World War II.

"For the first time in nearly a century, we see leadership in basic research and the economic ability to pursue the benefits of that research — to create and market products based on research — in more than one place on the planet," says Georgia Tech researcher Nils Newman, co-author of the High Tech Indicators study.

"Since World War II, the United States has been the main driver of the global economy. Now we have a situation in which technology products are going to be appearing in the marketplace that were not developed or commercialized here. We won't have had any involvement with them and may not even know they are coming."

When charted, China's change in the technological standing of the 33 leading industrial nations reveals a long and continuous upward line moving from "in the weeds" to world technological leadership over the past 15 years. *(See chart inset in photo above.)*

The 2007 statistics show China with a technological standing of 82.8, compared to 76.1 for the United States, 66.8 for Germany and 66.0 for Japan. Just 11 years ago, China's score was only 22.5. The United States peaked in 1999 with a score of 95.4.

"China has really changed the world economic landscape in technology," says Alan Porter, study co-author and co-director of the Georgia Tech Technology Policy and Assessment Center, which conducted the research.

"When you take China's low-cost manufacturing and focus on technology, then combine them with the increasing emphasis on research and development, the result ultimately won't leave much room for other countries."

China's emphasis on training scientists and engineers suggests it will continue to grow its ability to innovate.

"It's like being 40 years old and playing basketball against a competitor who's only 12 years old but is already at your height," Newman says. "You are a little better right now and have more experience, but you're not going to squeeze much more performance out. The future clearly doesn't look good for the United States."

Unmasking Counterfeiters

Georgia Tech researchers help shut down drug operations

Georgia Tech researchers were part of a three-continent, multi-organizational effort known as Operation Jupiter that successfully identified and shut down manufacturers who were flooding Southeast Asia with counterfeit — and ineffective — antimalarial drugs.

With 11 different organizations, including the Centers for Disease Control and Prevention, World Health Organization, Wellcome Trust and ultimately the international law enforcement agency INTERPOL, the global effort provided Chinese officials with enough information to shut down the drugmakers.

As their part of the investigation, the Tech researchers used sensitive mass spectrometry techniques to analyze nearly 400 drug samples provided by public health authorities. They also developed methods to speed up analysis, including an ionization process that reduced the time required to test a drug sample from half an hour to just a few seconds.

"About 50 percent of the samples obtained from the field in Southeast Asia were fakes," says Facundo Fernandez, an analytical chemist and assistant professor in the School of Chemistry and Biochemistry. "They look very real, even down to the hologram in the packaging. It's very difficult to tell which ones are the fakes and which ones are real."

Fernandez and graduate students Christina Hampton and Leonard Nyadong discovered that the counterfeiters were making their fake antimalarials with a broad range of mostly expired pharmaceuticals.

"We found old and ineffective antimalarials like chloroquine," Fernandez says. "We found antibiotics like erythromycin. We found all sorts of drugs that basically have no effect on resistant malaria parasites. Acetaminophen was one of the most common chemicals we found." >>>

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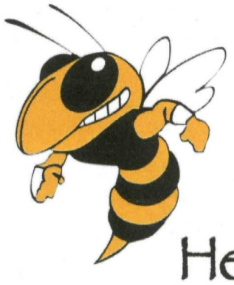

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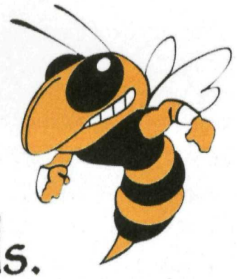

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This will take you directly to our exclusive online reservation service.

Mass spectrometry provides an effective means of identifying samples by determining their accurate molecular weight. But the conventional analysis can be time-consuming — especially in the preparation of samples.

Fernandez and his group developed a faster method that allows them to analyze hundreds of samples in a single day.

"You can take a tablet, put it in front of the instrument with an ionization source and you get a quick snapshot of what's in the sample. It provides a very high throughput pipeline to identify samples quickly," he says.

"This is absolutely 'CSI' — the techniques they use on the television program really do work in real life," Fernandez says.

The team provided enough information that Chinese authorities were able to shut down the manufacturers, which were sophisticated operations able to accurately mimic the packaging and holographic seals of legitimate pharmaceutical companies.

"The problem is not over," Fernandez says. "There are more fakes and more fake producers. But this is a beginning. Having an opportunity to do some good in this area is very satisfying."

Photo: Gary Meek

Georgia Tech analytical chemist Facundo Fernandez aided an international effort to halt the production of counterfeit antimalarial drugs.

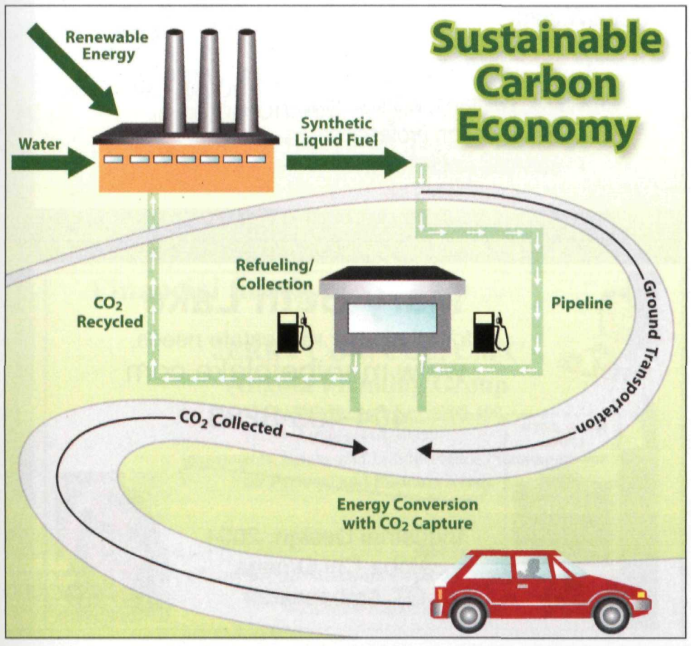
Emission-free Cars

Carbon capture strategy developed at Tech paves the way

By Megan McRainey

Georgia Tech researchers have developed a strategy to capture, store and eventually recycle carbon from vehicles to prevent the pollutant from finding its way from a car tailpipe into the atmosphere. They envision a zero-emission car and a transportation system completely free of fossil fuels.

Technologies to capture carbon dioxide emissions from large-scale sources such as power plants have recently gained scientific ground, but nearly two-thirds of global carbon emissions are created by much smaller polluters — automobiles, transportation vehicles and distributed industrial power-generation applications.



The Tech team's goal is to create a sustainable transportation system that uses a liquid fuel and traps the carbon emission in the vehicle for later processing at a fueling station. The carbon would then be shuttled back to a processing plant for transformation into liquid fuel.

The short-term strategy involves an onboard fuel processor designed to separate the hydrogen from the carbon. Hydrogen would be used to power the vehicle, while the carbon would be stored onboard the vehicle in a liquid form until it could be disposed at a refueling station. It then could be sequestered in a permanent location, such as geological formations, under the oceans or in solid carbonate form.

The hydrogen solution to carbon emissions does present a roadblock — infrastructure. While liquid-based hydrogen carriers could be conveniently transported and stored using existing fuel infrastructure, the distribution of gaseous hydrogen would require the creation of a new and costly infrastructure of pipelines, tanks and filling stations.

The Georgia Tech team has already created a fuel processor, called the CO2/H2 active membrane piston reactor, capable of efficiently producing hydrogen and separating and liquefying CO2.

The subsequent long-term strategy is to create a truly sustainable system, including moving past carbon sequestration and into a method to recycle the captured carbon back into fuel. The liquid carbon dioxide deposited at the fueling station would be piped to a facility to be converted into a synthetic liquid fuel. **GT**

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For more information, please contact Holly Green at holly.green@alumni.gatech.edu or 404-894-0765.

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Tech 100 Business Club

Tech Alumni Making the Tech Connection

Still Looking Skyward

Professor Loewy may be stepping down, but Tech's aerospace engineering chair has no plans to shift focus

By Pamela Babcock

A long time ago, a friend mentioned to professor Bob Loewy that someone "shouldn't be an aerospace engineer if they can walk down the sidewalk when a plane flies overhead and not look up."

Loewy has been looking to the sky — and later guiding others to the possibilities there — for more than six decades.

An internationally respected thought leader in his field and the William R.T. Oakes chair in the Daniel Guggenheim School of Aerospace Engineering, Loewy is stepping down in June. A search committee of faculty, staff and students will help select a replacement.

"I hate to give up such a great job, but it does seem that it's the right time," Loewy says. "Fifteen years as the chair of the school is a pretty long time."

Since 1993, Loewy's leadership has been critical in positioning aerospace engineering for the future, and he has used his knowledge, expertise and dedication to keep the School of Aerospace Engineering firmly in the top ranks.

Under his tenure, the school has seen strong growth in enrollment, faculty and sponsored research. Today, it's among the top aerospace engineering programs in the country —

ranked second for undergraduate programs and fifth for graduate programs by *U.S. News & World Report.*

"I always tell alumni that there's no aerospace engineering program at any other public university that is ranked higher than Georgia Tech's," Loewy says. "I'm very proud of this school, the faculty, the students and the staff."

The son of a furrier, Loewy grew up in North Philadelphia during the golden age of aviation. He spent summers at his grandparents' house in Ventnor, N.J. While the beach and ocean may have beckoned most young boys, Loewy spent most of his time pedaling to historic Bader Field in Atlantic City to watch general aviation planes take off and land.

"I was just fascinated by aircraft," Loewy recalls. "I would ride my bicycle out to the closest airport and get as close as I could." He also loved to draw planes and read about them in pulp magazines and books. Among his favorites was "Fighting the Flying Circus" by Capt. Eddie Rickenbacker, ace of aces for the United States in World War II. He now has an autographed copy.

Loewy earned his bachelor's degree in aerospace engineering from Rensselaer Polytechnic Institute in 1947 and later a master's from the Massachusetts Institute of Technology and a PhD in engineering mechanics from the University of Pennsylvania.

He began working in the field before the word "aerospace" even entered the picture. But the 1957 Russian launch of Sputnik 1 changed all that.

"People were working on things like that years before — writing about them or doing studies on space travel — but once Sputnik went up, everyone realized, 'Hey, you can really do this,'" Loewy recalls.

His more recent research interests include technology that supports the development of rotary wing aircraft — helicopters and tilt rotors — while earlier research focused on structural dynamics and aeroelasticity.

"Those two fundamental disciplines are supportive of every kind of space vehicle and aircraft, so I was doing research on launch vehicles and satellites as well as on fixed-wing and rotary aircraft," he explains.

From 1948 to 1962, Loewy worked for several companies, including Boeing. Perhaps his "hairiest" experience happened while on a test flight at Boeing for a tandem helicopter that was a prototype of the Marine Corps CH-46. Loewy was equipped with a parachute in case something went wrong.

"I was supposed to be watching the controls that ran up a bulkhead behind the cockpit and let them know if the controls were doing funny things," Loewy says. Meanwhile, he thought to himself, "If anything goes wrong, I'm going out that emergency door.

"We got into a maneuver and funny things happened to the controls," Loewy recalls. "I floated off the floor at zero G and realized later that even if I had wanted to go out that door, I couldn't get to it because I was floating in the air." Obviously, they made it back to the ground safely.

As a faculty member at the University of Rochester, Loewy was professor of mechanical and aerospace sciences, director of the Space Science Center and later dean of the College of Engineering and Applied Sciences. He took a one-year leave in 1965 to serve as chief scientist for the Air Force.

Loewy joined RPI as provost and vice president of academic affairs in 1974 and four years later became institute professor, a senior teaching and research position in the School of Engineering. He later founded the Rotorcraft Technology Center at RPI and served as its director.

Working in industry was great experience, but Loewy says his year as chief scientist for the Air Force opened his eyes "to a lot of things, particularly the dedication and excellence of people running the Air Force." He was adviser to both the secretary and the chief of staff.

When Loewy landed at Georgia Tech, he inherited an already outstanding program but an aerospace industry facing uncertainties. Over the years, he worked to grow funded research, the size of faculty and enrollment.

Today, the school has about 700 undergraduates, nearly 500 master's and doctoral students, as well as 39 full-time faculty members actively doing research at the national and international levels.

He says Georgia Tech students are not only bright and enthusiastic, but hard-working people who "love to get their hands on the hardware. They're capable of learning the mathematics, physics and theory and adept with computers, but they still love to touch something that's real," Loewy explains.

Loewy has received numerous honorary appointments and awards — among them NASA's Distinguished Public Service Medal, the Spirit of St. Louis Medal from the American Society of Mechanical Engineers and the Daniel Guggenheim Medal, which, since 1929, has honored some of the greatest names in aerospace.

Loewy has served on several NASA committees and chaired the aeronautics advisory panel. He chaired the Air Force Scientific Advisory Board and is a member of the National Academy of Engineering and an honorary fellow of the American Institute of Aeronautics and Astronautics. He and his wife have three grown children.

While Loewy himself isn't a pilot, he says he would have been if he had owned a World War I biplane fighter and could have flown with a white silk scarf trailing in the wind.

Stepping down from the school chair may allow Loewy time to catch up on his reading, since he's fond of history and adventure novels, or to listen to those show tunes from the 1940s he loves so much. Loewy does intend to keep involved, however, and looks forward to being active in some capacity at Georgia Tech. **GT**

"Georgia Tech students are not only bright and enthusiastic, but hard-working people who love to get their hands on the hardware. They're capable of learning the mathematics, physics and theory and adept with computers, but they still love to touch something that's real."

Photo: Gary Meek

Home of the Brave

Georgia Tech senior Stephanie England dives past the hanging American flag at the Aquatic Center, where the Institute hosted the Atlantic Coast Conference swimming and diving championships in late February. England, who earned All-ACC honors, scored a silver medal in platform diving and a bronze from the 3-meter board. Tech finished seventh overall. GT

Photo: Brian Casey

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