

GeorgiaTech

WINTER 2002

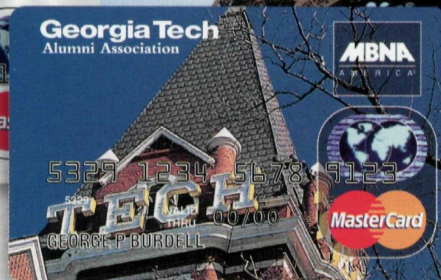
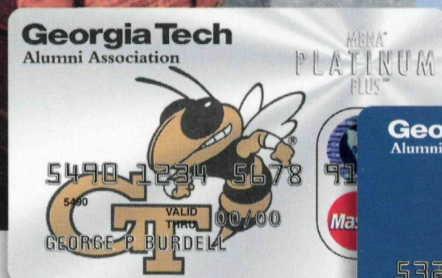
Alumni Magazine

09/11/01

A
Look
At
Ways
This Day
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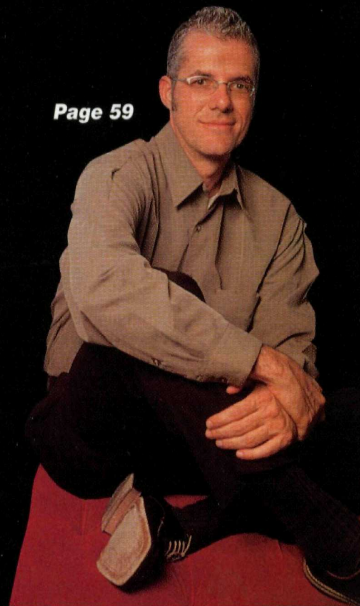
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— Don Berglund photo; opposite page: Laura Sikes photo



GeorgiaTech

Alumni Magazine

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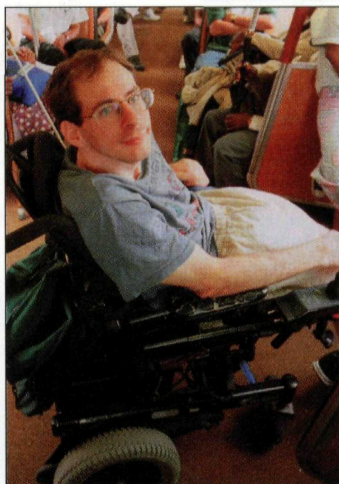
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Role Model for Everyone

Thank you for the insightful article about Ron Peterson and his triumphant battle with the debilitating neuromuscular disorder dystonia.

As a dystonia patient myself, I applaud Ron's courage, perseverance and dignity. Dystonia was very difficult to diagnose in my case because it sometimes mimics multiple sclerosis and lupus. I hope someday soon a Georgia Tech graduate will find the genetic key to the cause of the many forms of dystonia, as well as a cure.

We dystonia patients may perform tasks that are "natural" to most people more deliberately and slowly, but our minds are alert and oftentimes quicker than our hands and feet. Lessons in tolerance and patience should be taught and practiced by everyone. Dystonia spasms are now in my spine "24/7" and I, too, may find myself confined to a wheelchair. If that should happen, I will keep my sense of humor, dignity and love for all things White and Gold.



Ron Peterson

Ron Peterson is a role model for everyone and the true embodiment of a winner.

Ginger Holloway Argroves
Hillsborough, N.C.

Peterson Is Inspiring

Thank you for honoring Ron Peterson with an article in your (Fall 2001) ALUMNI MAGAZINE. Ron is amazing. His self-confidence and good humor are inspiring, considering what he lives with each day.

Your writer was correct. In spite of halting speech, Ron's intelligence is apparent when one has a chance to talk with him and know him. I was fortunate to work with Ron when he leased his apartment. I see him quite frequently and know firsthand of his complete self-reliance.

I was fortunate, too, to meet his parents and as a parent myself, I can only imagine their heartbreak as they searched for help for their son. However, I believe much of Ron's confidence is due to their ability to encourage him and to allow him to make his way in a world with obstacles. Ron is a pleasure to know. Thanks for allowing your other alumni to know of him and his accomplishments.

Betsy Hasting
Atlanta

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We Want to Hear From You

The ALUMNI MAGAZINE welcomes letters. Address all correspondence to:
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Confronting the Realities



The repercussions of 9/11/01 carry over into this new year in many different ways. From the recovery efforts in Lower Manhattan to the psychological impact on each one of us to the very real

implications of our security in the United States, what happened on "this day in infamy" changes how we will live.

Georgia Tech alumni are engaged in many aspects of responding to our new realities and in this issue, we're bringing you some of their stories — a New York psychologist, Centers for Disease Control employees, architects, pilots and researchers. You'll no doubt find them as interesting as I did.

As we start a new calendar year, I find myself contemplating the year gone past. It's not a forced exercise but something that naturally occurs. It may be an attempt at some closure — another chapter in the book is written. But the theme never changes even though the stories and events of the year do. The end of the year for me always arrives with a profound sense of thankfulness.

I'm grateful for my family, my country and the blessings that surround us. I'm also grateful for our staff here at the Alumni Association and at Georgia Tech who make our work fulfilling and challenging.

And I'm grateful to you — our dedicated alumni — for making Georgia Tech what it is today. Many universities have more alumni but none of them have more loyal alumni.

May you and your families have a wonderful new year. Thanks for supporting the Georgia Tech Alumni Association.

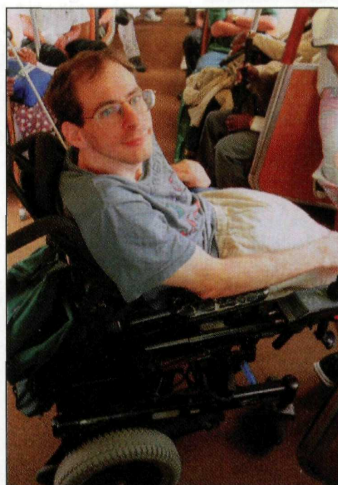
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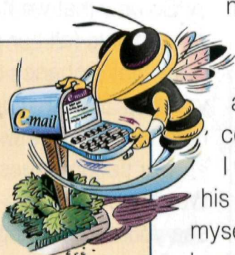
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Joseph P. Irwin
Executive Director
Georgia Tech Alumni Association

Elizabeth Jane's Fan Club

A stray letter on the eve of D-Day captures the fancy of two lonely ensigns

The letter from Dale French, a high school teacher in Linton, Ind., was intriguing. Could the Georgia Tech Alumni Association help her get in touch with an alumnus who had written a fan letter to her mother on the eve of the D-Day invasion of Europe?

The letter to her mother, Elizabeth Jane Kivell, was from two Navy ensigns who professed to be her biggest fans — although they had never met her. One was Tech alumnus W. L. "Bill" Wilhoit.

Wilhoit and F. Nye Moses were assigned to USS Landing Craft Tank 540 in May 1944 when a letter written by Kivell of Terre Haute, Ind., to a high school classmate came to them by mistake. Smitten, they forwarded the letter. Then they wrote her a letter of their own.

Dear Elizabeth Jane,

This is a fan letter! You wrote C.W. Faust on LCI (Landing Craft Infantry) 540. My executive officer and I saw your beautiful and neat handwriting, smelled the sweet perfume on the letter and said, "Anyone who sends letters such as this must be more wonderful than Paulette Goddard, Lana Turner, Betty Hutton and Ingrid Bergman all put together." We then said, "Why not write her a letter?" So I (we) did. I mean, we are now. This is it! How does it feel to have a "public"? We have already started a fan club — Elizabeth Jane Kivell Club No. 1 of England.

Let me explain that we are two very lonely lads and our morale is very low. We have hearts of gold, but girls never seem to bother finding it out after looking at our comical faces.

My executive officer's name is Bill Wilhoit. He graduated from Georgia Tech in February. He's a "rebel" from way back. As for looks — well, he doesn't really have any — exactly. Your first impression of him is Gargantua has

Tech alumnus Bill Wilhoit (right) was a lonely Navy ensign when he impishly corresponded with Elizabeth Jane Kivell.

arrived in England. But if you look closely, you will discover that he has yellow hair. For ears, he has sort of curly protuberances not unlike cauliflowers.

I don't think he has any eyes, at least I've never been able to find them. He says he can see so that settles it — he has eyes. His nose looks like a large, very red apple. It is his best feature. His mouth is good-looking, except he has no lips. We are at a loss to explain why, he just has no lips. He hasn't any teeth either, but has very pretty gums — at least I think so.

His physique? Well, he has size 26 shoulders and a 36 waist. His arms and legs are nice. They are only about the size of a baseball bat but are all muscle. He claims he had a girl once, but I doubt it. Anyway, every day he wishes he would get a letter from a girl, but he never does. Couldn't you surprise him with one? Just for the morale of the boys in the service?

Girls don't like me either, but I am a swell guy. I have sort of an inner beauty radiating from my heart. I cannot explain why others don't discover it.

I have beautiful red eyes (at least you can see mine) and a long, finely formed nose (visible for a distance of 14 miles). I have the best-looking ears. They are real big and they sorta stick out very attractively. I think my lips are a little thick, but you wouldn't notice them so much if I didn't lisp. (At least I don't

stutter like Bill.) My best feature, though, is my dark bushy hair, which sticks up like I was a Fuller Brush man's sample.

My name is Nye Moses. I went to the University of Southern California, and I graduated 14 months ago.

Now that you know what we look like, we will get on to the real question. It is: Who are you in love with? Bill thinks it is with this C.W. Faust, but he admits that he could be wrong for he realizes that no girl who writes as beautiful as you could fall in love with an LCI man. They don't do enough on an LCI to deserve a girl like you.

You might be in love with a pilot because a pilot sounds like a hero. But we can tell that you are far too sensible to fall for the novelty of an airman. We know you wouldn't consider an Army man or a Marine.

Thus, we come to the conclusion that you are not really in love with anyone. Perhaps you are looking for a good, upstanding young man to fall for. Well, have you ever considered falling for two broken down LCT men? LCT men — don't the words alone "LCT men" thrill you? We're heroes! We fight in invasions and everything! Only the best are allowed on LCTs.

So now that we have told you all our good points (all our points are good; we never get a chance to be bad), won't you think over the idea and try very hard to fall in love with us?

Our second question is a request: Won't you write us a letter so we can see your handwriting and smell the beautiful envelope again?

If you only knew how low our morale is, you'd rush right down and send a telegram — only we'd rather have a letter, so please, please write.

Our third question is also a request: After seeing your handwriting, we decided you must have a personality like Greer Garson, a face like Dona Drake, a figure like Paulette Goddard and a voice like Helen O'Connell. So we would like a snapshot of you if it wouldn't be



too much trouble.

Seriously, though, Elizabeth Jane, our real reason for writing was to see your handwriting again and to see if you look like we imagine you do. We had an argument as to what you look like. My idea is that you are about 5 feet 4 inches tall, with dark hair maybe worn fairly long and it comes to a "V" about your shoulders. You, of course, would be petite and dainty and very sweet. You have blue eyes and a wonderful smile and you laugh a lot and talk softly.

Now Bill, being from the wilds of Georgia and not cultured like we who are from Los Angeles, thinks quite differently. He says you are about 5 feet 6 inches tall and slim with beautiful legs, about 23 years old. You have light hair and blue eyes. He thinks you are sophisticated, smooth and very poised. You would be an excellent dancer and would only be seen in the best places and have your picture printed once a week in the daily paper leaving dinner with a fine LCT man (preferably him).

So you can see we'll never be satisfied until we know what you are really like. So won't you please write and send us a snapshot of yourself? We have to live together and until this matter is settled we won't have a minute's peace.

In ending, let us say it has been fun knowing you already and you haven't even answered us. Just think how much fun we'll have after you have answered us and we are old friends. We know you won't let us down. Now don't forget:

First, fall in love with us.

Second, write us a letter.

Third, enclose a snapshot.

So until we hear from you, goodbye and we eagerly await your answer.

Bubbling over with unwanted love,

Nye (Pinocchio) Moses

Bill (Atlas) Wilhoit

After discovering the letter, French got on the Internet in an effort to find information about Wilhoit and Moses. She came across the Alumni Association's Living History Web site, and contacted Marilyn Somers, director of the Living History program.

"This is the only letter I know of from them and I know nothing of what happened to them. There is a note on the letter that she answered it on June 26, 1944," French wrote to Somers.

"They were partly right in their assumptions about her. She was about 5 feet 3 inches, had dark auburn hair, was very attractive and in love with a pilot, Ensign Dale Leslie French. She was married to him on Sept. 19, 1944. He was killed in a plane crash the following year and I was born that September. Elizabeth Jane Kivell French Wheat passed away on Jan. 1, 2001 — still a beautiful person."

French, who was named for her father, wondered what happened to Wilhoit and Nye. Had they survived the war? Did the Alumni Association have a record on Wilhoit?

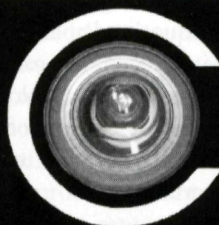
Wilhoit, ME 46, is retired from CIGNA Corp. and he and his wife, Alice, live in McKinney, Texas.

Wilhoit remembered the letter, written in mid-May 1944 when the LCT was

anchored in Portland, England, awaiting orders to sail to France for the Normandy invasion. "I reported to the 540 early in May 1944 as a freshly commissioned college kid with very little training in landing craft of any kind," Wilhoit says. "I had just turned 21 and Nye was a couple of years older. Nye pretty much tutored me and also became my friend in the four or five weeks we knew each other."

Moses, who was the commanding officer of the landing craft, died in the early minutes of the D-Day invasion of Normandy on June 6, 1944. Wilhoit, who assumed command, was awarded the Navy Cross for his action in the invasion, and the ship's crew was awarded the presidential citation.

"Elizabeth Jane did reply to our letter," Wilhoit says. "I had to write her and tell her that Nye was killed." Wilhoit was later assigned to the Pacific, where he fought in the battle of Okinawa. After the war, he returned to Tech to complete his degree and begin his career. GT



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Atlanta Shore

Tech grad directs development of South's newest fish bowl

A Georgia Tech alumnus known for resuscitating failing zoological attractions has been named executive director of the Georgia Aquarium, a 5 million-gallon, 250,000-square-foot behemoth planned for Atlanta's Midtown.

Jeffrey Swanagan, executive director of the Florida Aquarium in Tampa, will manage the Georgia Aquarium. He was introduced at a Nov. 19 news conference by Bernard Marcus, co-founder and president of Home Depot, who pledged \$200 million to build and endow the aquarium.

Swanagan, MS TASP 93, spent 10 years as deputy director of Zoo Atlanta and played a major role in its renovation before leaving



Jeffrey Swanagan wants to make the Georgia Aquarium one of the nation's top exhibits of sea life.

for Tampa to rescue its facility, which had become a white elephant attraction.

"This will have a world focus so that we can tell any freshwater or saltwater story," Swanagan says. "I hope the Georgia Aquarium will make people in Atlanta as familiar with the sea as they are with the Chattahoochee River."

In addition to serving as a tourist attraction, the aquarium will also become

a research center where scientists can unravel the mysteries of the seas.

"If this aquarium is built the way it's envisioned, it will be wonderful for economic development as well as basic science," says Tech professor of environmental biology Mark Hay. "It will be of immense importance to researchers."

Swanagan says he and his staff will be observing aquariums around the

world to study their exhibits, planning and public appeal.

Educational programs, part of Swanagan's stock-in-trade, will be featured prominently and will include hands-on and interactive exhibits that will make up a major portion of the attraction, which is scheduled to open in 2005.

"We want an aquarium like no other," Swanagan says.

O Christmas Tree

Georgia Tech architecture students create White House tree ornament

Four Tech architecture students designed a miniature replica of Rhodes Hall, headquarters of the Georgia Trust for Historic Preservation, to adorn the White House Christmas tree. First Lady Laura Bush (*right*) stands by the tree decorated with replicas of historic buildings from every state.

Every year, the White House solicits four handmade Christmas ornaments from each state arts agency. This year's theme was "At Home for the Holidays."



Catie Newell, Chris Fender, James Fullington and Erin Mosely, members of the Institute's student chapter of the American Institute of Architects, created the 6-inch-by-6-inch ornament from basswood.

"We took photos and used them to make templates, then we used layers of basswood to give it a three-dimensional look,"

Newell says. "It took about three hours to make it.

"We're really excited to know that our work will end up in the White House," she continues. "After Christmas, it goes into the holiday archive so it will be there for a long time."

Highest Honor

Julian LeCraw receives Alumni Distinguished Service Award

By John Dunn

Julian LeCraw Sr., an Atlanta developer and businessman who served as president of the Georgia Tech Foundation during its \$712 million Campaign for Georgia Tech, is the Fall 2001 recipient of the Joseph Mayo Pettit Alumni Distinguished Service Award.

It is the highest award conferred by the Georgia Tech Alumni Association and is named for the late Dr. Joseph M. Pettit to honor his accomplishments as president of Tech from 1972 to 1986.

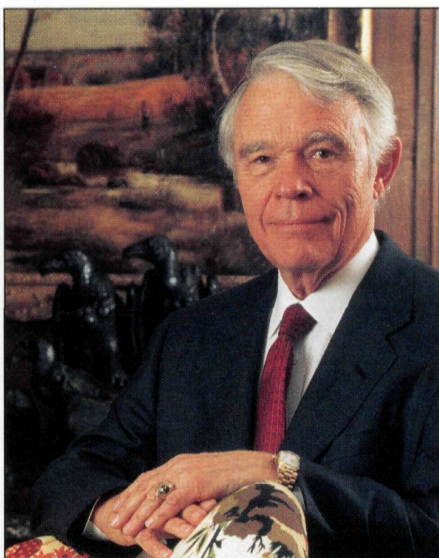
LeCraw and his four brothers all earned Tech degrees, following in the footsteps of their father, Roy LeCraw Sr., who attended Tech after World War I.

"My father was a wonderful role model for me and my brothers," Julian LeCraw says. The elder LeCraw was elected mayor of Atlanta in 1940, but after Pearl Harbor was attacked and America declared war, he left office to serve in the Army. After the war, he went into the real estate business, then served as an Air Force colonel during the Korean War.

Julian LeCraw came to Tech to study management and prepare for a career in real estate. "It has the best background for real estate with courses in management, accounting and marketing."

A member of the Chi Phi fraternity, LeCraw attended Tech through the Navy's Holloway program. It was a 12-year program that included four years of Naval ROTC, three years of active duty and five years in the Naval Reserves. He was commissioned after graduation in 1952, the same year he married Joanne Sue Delany. They have three grown children and eight grandchildren.

Following a three-year tour of duty in the Navy, LeCraw returned to Atlanta and went into business with his father. Several years later, he founded Julian LeCraw & Co.



Gary Meek

As Atlanta has developed, so has the company. LeCraw's firm has grown from an entrepreneurial family real estate business to a service-oriented enterprise that includes apartments, hotels, office buildings and shopping centers.

"I can remember when Sandy Springs was out in the country and Vinings was another world," LeCraw laughs. "I went to a Boy Scout camp in Vinings that was so far out it took us a day to get there."

"Atlanta is so huge," he says. "It's about 60 miles north to south and 60 miles east to west of solid development. Atlanta has unlimited borders, unlimited land and no natural boundaries. It's just going to continue to grow."

The major problem Atlanta faces is transportation, LeCraw says.

As an alumnus, LeCraw has continued to be involved with the welfare of Georgia Tech. He has served on the National Campaign Steering Committee, the DuPree College of Management Advisory Board and as a member of the Georgia Tech Foundation, serving as president from 1997 to 1999.

In addition to his Tech degree, LeCraw received a law degree from the Woodrow Wilson College of Law. He is a founding member and past chairman of the Buckhead Coalition, a group of 75 business executives. He is a past vice chairman of the Fulton County Development Authority. He has served as president of the BellSouth Golf Classic, a Professional Golfers' Association of America tour event.

75 Years Ago

A bronze-plated eagle from the prow of the USS Georgia was presented to Georgia Tech. The 4-foot-high eagle and 36-foot-long bronze scrollwork from the ship's bow were mounted on the inner wall of the south stands of Grant Field. The ship was launched in 1904 and scrapped as a result of the 1921 Washington Disarmament Conference.

50 Years Ago

Student Bob Templeton made a \$40 contribution to the World Student Fund for the opportunity to be chauffeured on a date by Tech President Blake Van Leer in his Cadillac. When friends chided Templeton there would be "no smooching" that night, Van Leer promised to take Templeton and his date home on a ride through Piedmont Park, where he "couldn't see a thing in the dark."

25 Years Ago

It was a long way from room 308 in the old Knowles Dormitory in 1942 to 1600 Pennsylvania Avenue in 1977, but Jimmy Carter made the trip. Carter began serving his term as president of the United States on Jan. 20, 1977. Two Georgia Tech professors — Stan Bailey and James Craig of the School of Aerospace Engineering — designed a mobile solar-heating system for the inaugural reviewing stand to keep Carter warm during the inaugural activities.





Heroes' Welcome

USS Enterprise captain and his crew return home from Persian Gulf

Capt. James A. "Sandy" Winnefeld Jr., commander of the USS Enterprise, was featured on a live Nov. 9 broadcast of "Good Morning America" from the deck of the Navy's largest aircraft carrier.

The Enterprise returned to port in Norfolk, Va., after an extended eight-month tour in the Persian Gulf. The ship was two days out on Sept. 11 when the terrorist attacks occurred in New York, Washington and Pennsylvania.

"We have live TV on board and I got a phone call from a shipmate who told me I'd better turn on the television," Winnefeld, AE 78, explained during an interview on the show. "We watched as the airliner hit the second World Trade Center tower."

Immediately Winnefeld slowed the ship's speed in anticipation of the order he knew would come to turn the ship around.

"Not a single sailor complained when we were told to turn around two hours later," Winnefeld says. "The crew said you could hear the ship creak, and I know you could feel it rumble because we turned around so fast."

At top speed, the Navy's first nuclear-powered aircraft carrier reached the Persian Gulf the next day and was part of the first fighter group in the Gulf ready for action. The ship's 72 fighter planes flew hundreds of bombing missions into Afghanistan before returning to Norfolk on Nov. 10.

Fall 2001 Commencement

About 1,040 undergraduates and graduates walked in the Fall 2001 Commencement Dec. 15 at Alexander Memorial Coliseum. The ceremony marks the first graduating class of the Georgia Tech Regional Education Program, with seven students receiving diplomas. GTREP affords students in southeast Georgia the opportunity to earn a Georgia Tech degree using local faculty, facilities and distance learning connections at three partner institutions: Georgia Southern University in Statesboro, and Armstrong Atlantic State University and Savannah State University in Savannah.

Commencement speaker Shirley Ann Jackson, president of Rensselaer Polytechnic Institute, also received an honorary degree from Georgia Tech.

Most Wired

Some colleges disconnect from Yahoo! Internet list

Yahoo! Internet Life and its annual list of America's most wired colleges has had some shocks in its brief history.

The magazine crossed wires in its early surveys that began five years ago. They were conducted in such a haphazard way that at first Georgia Tech didn't even make the top 100. In fact, no Georgia colleges were on the list.

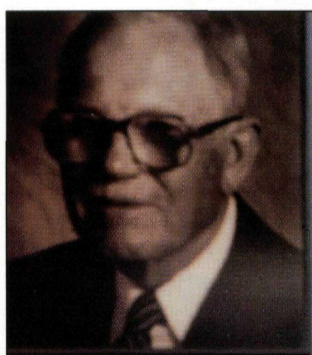
In *Internet Life's* latest rankings, Tech is No. 3, right behind Carnegie Mellon and Stanford and two places ahead of the Massachusetts Institute of Technology, which finished fifth.

Strangely, however, Delaware, which didn't even participate in the survey, is ranked No. 8.

This year, four of the top 10 colleges on the most-wired list and 26 out of the top 100 refused to supply data to the magazine, according to the *Chronicle of Higher Education*. At least 84 colleges and universities did not participate this year, according to a University of Chicago list.

The rankings of "most wired colleges" have drawn criticism because Yahoo! does not reveal its criteria and keeps its data and ranking formulas secret, the *Chronicle* said.

Yahoo! told the newspaper about 1,300 colleges and universities were included in its analysis, and that much of the data was readily available on Web sites.



Inventor and Tech grad Harold W. Gegenheimer, who made the patents exhibit possible, speaks at the dedication ceremony.

Patents on Parade

Exhibit recognizes mechanical engineering inventions at Tech

Over the past 26 years, the faculty of Georgia Tech's Woodruff School of Mechanical Engineering has secured patents for everything from a better vacuum

cleaner and a collapsible footstool to a fluid jet surgical cutting tool and an orthopedic leg brace with cable controls.

These patents are just a

few featured in an exhibit, "The Patents of the Woodruff School Faculty," made possible through the Harold W. Gegenheimer Endowment for Innovation.

Located in the second floor atrium of the Manufacturing and Related Disciplines Complex, the patent wall was dedicated on Nov. 1 and features a photo and biography of Gegenheimer, ME 33, who endowed the display, plus brass plaques engraved with the first page of each patent application held by current faculty within the school.

The display holds 137 plaques on the wall representing the accomplishments of 34 faculty members from 1975 through the present and more patents will be added as faculty members acquire them.

Gegenheimer, who also sponsors the Woodruff School's annual Harold W. Gegenheimer Lecture on Innovation and who himself holds 20 patents, was on hand to take part in the dedication.

Gary Meek

New Smith Exhibit

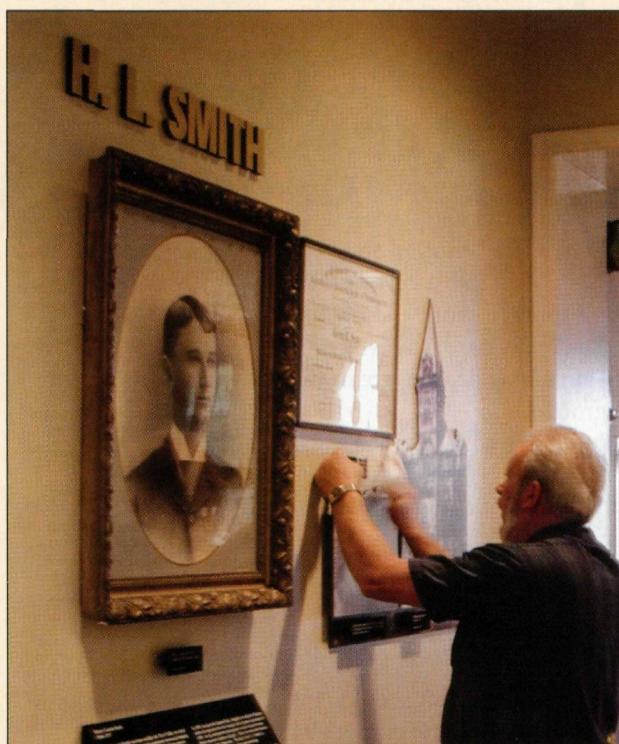
Georgia Tech's first graduate, Henry Losson Smith, is featured in a display on the mezzanine of the Alumni/Faculty House. The exhibit shows a copy of Smith's original diploma, a portrait and a photo of the campus in 1888.

Smith was born May 7, 1866, in Newton County, Ga. He graduated from Davidson College in North Carolina. Seeking engineering credentials, he enrolled at Georgia Tech, graduating in 1890 in mechanical engineering.

Smith worked as a superintendent at the Fulton Bag & Cotton Mills in Atlanta.

He organized the first Georgia Tech Alumni Association in 1898. It was unchartered and appears to have dissolved after Smith moved to Dalton, Ga., where he went into business with his brother, Marcellus, manufacturing tents, overalls and flour and meal bags.

Smith appreciated being Tech's first graduate; he supported Tech by giving to Roll Call when the fund began. He made regular appearances on the campus until his death in 1957.



Neil McGahee

Mike Keza



By Kimberly Link-Wills

David Rudolph, IE 96, is not much older than most of the Georgia Tech students who listened to his words of advice at the President's Scholars fall luncheon. But at age 28, he already has worked his way up the ranks in the cable television industry and is now vice president and general manager of Turner South.

"I have had some very early success and a lot of people ask me, 'How'd you do it? There must be some secret, some plan,'" Rudolph told the students. "I was very well prepared by this institution and by the President's Scholars program. I got into a very good company that rewards people for their work and not for their tenure. And I worked really hard. My wife didn't see me for about a two-year stretch while we were trying to get this network off the ground."

Rudolph said he has learned eight life lessons:

1. *You are a reflection of those you surround yourself with.*

"It starts with your family and friends. If you want to be successful, you have to be around successful people. If you're around unsuccessful people, you will slip into that pattern and it's very difficult to get out of it," Rudolph said.

2. *Never stop learning.*

"I'm very frequently reminded how little I know," he said. "For me, it's not about what title I have or what position I have or how much money I make. I make every career decision based on the opportunity to learn. I hope that

will continue to guide me. As the titles get bigger and the money gets bigger, it gets more and more difficult not to chase after that elusive grand opportunity. But if I continue to learn, then I know I'm going to continue to be happy."

3. *You will fail. The question is how you will react to failure.*

Rudolph told the students they should expect failure in the work world. "When you get into the business world, if you have a success rate over 50 percent, you're going to be unbelievably wealthy," he asserted. "The key thing is when you fail, learn from it. Don't give up. Try a different path and be resilient."

4. *Leadership is lonely.*

Rudolph said co-workers with whom he once socialized now work for him. "They react differently around me now because I'm the boss. When I come into the room, they start talking differently."

5. *Never underestimate the importance of luck and timing.*

"There are things you can do to tip that good luck and good timing in your favor. When I had a big opportunity come my way, which was to write the business plan for this network and launch it, I recognized it early and went at it 100 percent," Rudolph said. "When fortune smiles upon you, take big advantage of it."

6. *Keep the word "no" to yourself.*

"This is something I partly learned at Tech but it has been reinforced to me at Turner," Rudolph said, explaining that the woman who hired him quit before his first day on the job. "The guy who was running the group in strategic

planning met with me the first thing in the morning and said, 'Look, I don't like undergraduates. I only deal with MBAs, so just go sit over in the corner and don't bother me.'"

Rudolph had worked at Turner Broadcasting as a co-op student and already was acquainted with many of the employees. So he began making his own work and, over time, proved himself to his supervisor. He proved himself to Ted Turner after the department was given the task of determining how much the E! entertainment network was worth as the company considered buying it.

During a meeting, someone asked who knew how to value a network, Rudolph recalled. "My hand popped up. I had absolutely no idea, but nobody else in the room raised their hand so I got the assignment. I ran right back to my office and pulled out all my old textbooks and got on the phone and called my Tech professors. I didn't know how to do it, but I learned how to do it."

7. Be a good person.

"This is one I have to constantly remind myself of. As you go along, it gets really, really hard to stay a good person" in a corporate world filled with back stabbing and office politics, he said. "You can get caught up in success and material things but, at the end of the day, it truly doesn't matter. What really matters is the relationships that you have."

8. Find your own path.

"I was an IE. I don't know what IEs are supposed to do. I was going into consulting and get my MBA and then figure out what I was going to do with the rest of my life," Rudolph said. "Until my second or third year of college, I lived more for my parents. I did well because they wanted me to do well and I didn't want to disappoint them."

"Up to this point, you've always had people, whether it's parents or teachers, pushing you in a certain direction. You're about to be completely free and you're going to be prepared to do whatever you want to do. Find your path. Pursue it passionately and you will do very, very well," he advised Tech students.

"It wasn't until I had that transformation period when I realized I wasn't going to be really happy until I figured out what I wanted to do that I really started having success," Rudolph said, adding that, as a result, he has had fun and learned a lot along the way.

"Thankfully, a lot of other stuff has come along with it. I happen to work in a pretty cool industry and when I come home and stay up real late watching TV and my wife yells at me, I can just tell her I'm working."

After making it through Tech, the President's Scholars won't have much trouble succeeding in the work world, according to Rudolph. He told the students:

"You're going to be amazed at how much easier life gets after you graduate." **GT**

Triathlon Champ

Alumnus Flip Lyle racks up hundreds of competitions in midlife passion

James Arthur "Flip" Lyle is looking to break a record that's never been set. Lyle, IM 67, has competed in a staggering 270 multi-sport competitions — including duathlons, triathlons and Iron Man competitions — all since entering his first competition at age 40.

Now 56, Lyle has won the championship in his age group for the Southwest Challenge Series — a duathlon and triathlon championship — nine years out of the 11 the competition has been held, including this year in the 55-to-59 age group.

He was also inducted into the El Paso Senior Games Hall of Fame for 2001.

A varsity football player at Tech, Lyle says he has always tried to keep in good physical shape. "I swam at Tech and I started running when I got into the Army after graduating from Tech. Then I got a really good bicycle for my 40th birthday, so I got into cross training with all of those and decided to compete."

He lives in El Paso, Texas, where the weather permits year-round outdoor training, and competes in 15 to 21 events per year locally, around the country and in Canada. Lyle won 13 of the 2001 Southwest Challenge Series races in which he competed. He also won all three races in his age group for the Tucson Triathlon Series in 2001.

Lyle says the most challenging event he has ever competed in was the Iron Man contest in Hawaii in 1992.

How did he do? "Well, I finished," he says, laughing.

With 270 competitions under his belt, Lyle says he hasn't found anyone who has competed in more of the multi-sport events than he has, but he feels he should be better safe than sorry before challenging the un-held record.

"When I get to 300, I'll apply to Guinness for the record," he says.



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The Fear Factor

A jittery nation struggles to regain its composure after terrorist attacks. A New York City psychologist talks about the return to "normalcy."

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New Yorkers Open Up

Neighborhood fire stations become shrines of goodwill and passersby exchange greetings. The city's changed since 9/11.

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AFTER

HOW SEPTEMBER 11



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Campbell's Sensor

Now everybody is interested in GTRI scientist's efforts to create a biological sensor that will warn of harmful chemicals.

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RMATH

CHANGED OUR LIVES



The Fear Factor

A jittery nation struggles to regain its composure after terrorist attacks

By Neil B. McGahee

Machine gun-toting soldiers in airports. Fighter jets patrolling city skies. Hazardous-materials handlers clambering into office buildings wearing suits more appropriate for a space walk. Anthrax. Smallpox. Rumors of nuclear weapons in suitcases. How do you return to "normal" when feelings of overwhelming fear and sadness are suddenly commonplace? Will things ever be the same again after the catastrophic events of Sept. 11, 2001?

James M. "Joe" Lay, Mgt 71, lives with the aftermath of the terrorist attacks on New York and Washington. The 53-year-old psychologist sees grim reminders every time he steps outside his office in Greenwich Village.

"Everyone has been affected. No one has not," Lay says. "When the first plane hit the World Trade Center tower a friend banged on the door, and we went up on the roof and watched the events. It was surreal — like watching a movie.

"I think one of the things you try to do is normalize a lot of the feelings. For people who have never been through a shocking trauma like this — one, they find themselves numb when they think they ought to be feeling something, or two, they are feeling anger, rage, exasperation, a lot of emotions which can feel like they're spinning out of control. The event itself is literally too big to take in.

"I try to tell people that when these things happen a process starts. It's a process that unfolds over time

and it's our human way to absorb events that are too large to take in all at once. We all will feel differing degrees of shock, anxiety, anger and sadness. These degrees will change over time and become less intense."

Lay says any source of fear exacerbates personal problems we may have, so you may see exaggerations of these problems due to increased anxiety. The classic syndrome is post-traumatic stress disorder that manifests itself in recurrent and intrusive recollections of the event or "flashbacks" — recurrent or distressing dreams or intense psychological distress from exposure to cues that resemble the event, such as a hand clap sounding like an explosion.

"Around here," Lay says, "the smell works that way. If the wind blows in your direction, that awful smell returns and people get anxious. It's a powerful cue that brings back the memory of the day."

Lay is a native of Shellman, a small farm town in southwest Georgia. He came to Georgia Tech in



1967 to study aerospace engineering, but switched to management.

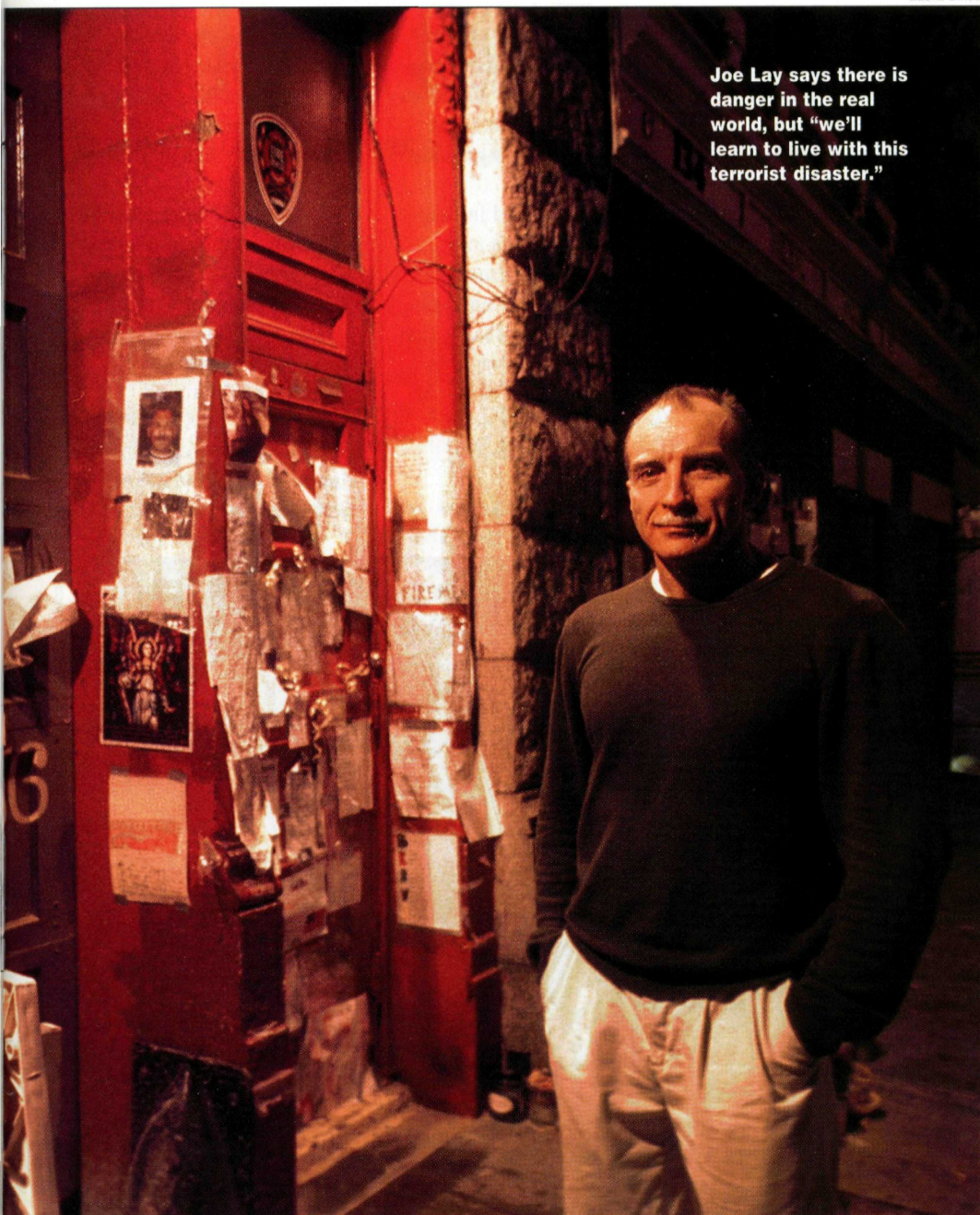
"Aerospace just didn't feel right," he says. "I wanted to finish at Tech, but I had already become fascinated with human behavior. I thought I could take some of the management experience to grad school."

Lay received his master's and doctorate in psychology from Florida State and moved to New

York, where he established a psychotherapy practice.

After watching the twin towers of the World Trade Center collapse, he went to the nearest fire station and offered his services as a counselor. When he listened to the stories of fear and helplessness, he heard an old, familiar strain.

"I worked through the whole AIDS crisis long before the virus was identified," he says. "It seemed as though everyone had it



Joe Lay says there is danger in the real world, but "we'll learn to live with this terrorist disaster."

New Yorkers Open Up

Neighborhood fire stations become shrines of goodwill

By John Dunn

The terror of Sept. 11 has drawn New Yorkers closer together, says Roy H. Owen, whose office with Deloitte & Touche Consulting is in Two World Financial Center, across West Street from the disaster site of the World Trade Center.

"New York had gotten a lot friendlier even before this, particularly in the neighborhoods, like on the Upper West Side where I live," says Owen, AE 68. But since the tragedy, New Yorkers have opened up to one another.

"All the neighborhood fire stations have just turned into shrines, with goodwill messages and flowers and candles, and people stopping and talking to firemen out in front of their fire stations. You just never would do that before," Owen says.

"People stand on the sidewalk waiting for the light to change and talk with strangers," Owen says. "People talk to each other while waiting in line at the checkout counter at a retail store. They talk to the people sitting next to them in restaurants."

Owen witnessed much

and no one knew exactly what it was or where it was coming from. There was panic and anxiety, and people were dying horrible deaths from an unknown threat.

"Over time, though, people began to realize that they could live with AIDS if they changed their lifestyles to accommodate the threat. Now we have a problem with people not being worried enough and unsafe sexual behavior is

creeping back in."

Lay says it is a testament to the enormous adaptability of human beings that we can adjust to many horrible circumstances, and that is the key to our survival.

"We're very hardy. Psychologically, we will learn to live with this terrorist disaster — especially here in New York.

"We know there could be a chemical or biological attack on the subway, yet

we continue to ride the subway. People still work and live in tall buildings. They have nightmares or waves of anxiety, but gradually we make it a part of our lives," Lay says.

"Maybe we were living in an illusion of an overly secure world," he continues. "The world — life — doesn't offer us that level of security. There's danger in the real world and we can manage that but it will take time — maybe years."

of the devastation after terrorists crashed commercial airliners into the twin towers. At about 8:50 a.m., the subway, which ordinarily pulled in under the World Trade Center, stopped one stop short.

"We got off at Chambers Street, two blocks north of the North Tower," Owen says. "Somebody ran screaming in the other direction as we were coming up the subway stairs that a plane had crashed into the tower."

Owen joined the stunned crowd watching from the street. "When the second explosion happened, we didn't think it was a plane because we couldn't see or hear a plane. We just saw this huge fireball erupt out of the north face of the South Tower. Then we all thought it was a bomb that had been planted; we started thinking that something was going on."

Owen says he walked west and saw people

stranded on ledges of the burning buildings and others leaning out of windows waving their jackets and pads of paper to signal for help.

Owen watched in helpless horror as men and women leaped from the buildings and plunged to their deaths. "That was the worst. That was horrible."

Because the terrorist attack occurred before 9 a.m., lives were saved, Owen says.

"New York is a 9

o'clock town, as opposed to Atlanta, which is an 8 o'clock town. So a quarter to nine, fortunately, is a little bit early to catch the maximum crowd," Owen says. "A lot of us were standing on the sidewalk with people who were supposed to be in the building — and would have been in another 10 minutes.

"This has changed everybody's perspective. Everybody who died that day died doing what they normally do every day." **GT**

Laura Sikes

Roy Owen: The tragedy has changed New Yorkers. "People stand on the sidewalk waiting for the light to change and talk with strangers."



Pride on the Front Lines

Bioterrorism crisis creates new priorities at the Centers for Disease Control

By Kimberly Link-Wills

Outbreaks of anthrax and the threat of bioterrorism have dramatically altered priorities at the Centers for Disease Control in Atlanta. The workload, security, media glare and calls from the public all have an increased sense of urgency. "I've had two noticeable changes. One, I have to carry a cell phone; I'm on call 24 hours a day. Two, the actual work has increased. For about a three-week period, I was working 16-hour days," says Mike Dillon, AP 89, a biologist in the National Center for Infectious Diseases.

As a team leader in the Scientific Resources Program, Dillon is responsible for supplying CDC laboratories. The anthrax investigation has put him on call 24 hours a day.

"As soon as they had a positive test, they would call me on the cell phone and say, 'I need these supplies in the next three hours to put people on a plane'" to fly to the scene, he says.

"With the first outbreak [in Florida], we were caught a little off guard. They needed supplies to diagnose whatever they had. They needed protective equipment to send the people in. They called me with a list of maybe 15 items — disposable gowns and masks, gloves, throat swabs, ear swabs.

"What caught us off guard was that anthrax grows well on a microbiological-medium plate with sheep's blood added to it. Initially, when they wanted to do environmental testing on the entire building, they hit us with a request for 5,000 plates. It takes us about eight hours to make 1,000 plates. I ended up pulling in all the people beneath me and we worked for

two or three days and just made plates," Dillon says.

"The other limiting factor was we didn't have enough sheep's blood on hand. We had to find vendors across the United States who had what we needed. We thought 10,000 plates would suffice. We ordered 100 cases of plates and went through those in three days."

Fear of additional terrorism has meant increased security at his workplace, Dillon says.

"They've put concrete barriers all around the CDC. The guards have guns now. They've closed off some entrances. There are guards in the parking lot with handheld metal detectors. Now they're opening our trunks in random checks."

He was surprised at the amount of fear the anthrax cases generated. "Initially, when the anthrax outbreak occurred, we were getting a ton of calls from the general public, from law enforcement, from doctors and hospitals just looking for anthrax information. A request was sent out throughout the CDC for volunteers to man a

hotline. For about three weeks in the evenings after my normal job, I'd go into the hotline center and answer calls. We were probably getting close to 1,000 calls a day.

"My initial shock was how the country was taking it, the number of calls from people who were upset about it. For a lot of people, it was calming enough just to talk to someone. That was the most rewarding for me. Even though I was working an extra eight hours a day, throughout the country there were families who were going to bed a little easier that night because of an answer I gave them."

Paul Charp's new job focus doesn't have a calming effect.

"The major work I've been doing involves stuff that hasn't happened yet. It's more a needs assessment for other disasters that may happen, the nuclear side," says Charp, MS HP 88, a senior health physicist who was handed his new tasks because of his work in radiation.

"My major focus is radioactive waste issues associated with public health. I also serve as an

agency contact for emergency response on the radiation and nuclear side. I would be one of the first ones who would be contacted" after a nuclear attack, Charp says. "Any kind of terrorism is bad enough. Nuclear opens up a whole new can of worms and it's something we've had to live with since 1945.

"A lot of analysts in the news say the U.S. is not well prepared. I don't think any country can be prepared for it. I think you can apply that to any large-scale disaster, whether it be bioterrorism or nuclear or environmental or hurricanes or whatever. I think they're working to become more prepared," says Charp, who is on call 24 hours a day and, in the event of a nuclear attack, would be called on to mobilize supplies, set up response efforts, secure sites and transport materials to staging areas.

Rita Ford, ChE 76, says all CDC employees shifted to new responsibilities were required to read up on anthrax to become prepared to deal with that threat. "We're truly learning more each day."

Ford has been working on the anthrax investigation as part of the occupational and environmental team. "We develop guidance on sampling techniques, decontamination techniques and personal protective equipment.

"We didn't even have an anthrax team before. Several people from my group were shifted to work on anthrax," Ford says. "Hopefully there won't be any more cases

of exposure and the FBI will figure out who's doing this."

Until that time, the CDC will remain in a heightened state of alert. The investiga-

tion also will continue to bring public attention to the CDC, which has been promised an influx of federal funding that will be used in part to renovate

dated facilities.

President Bush brought the national press to Atlanta when he visited the CDC in early November.

Despite the work in-

crease, new duties and media spotlight, Ford sees a positive change in her fellow employees at the CDC.

"The biggest thing is there is more pride." **GT**

After anthrax was discovered, Centers for Disease Control decontamination crews dressed in hazardous materials suits to investigate contamination sites.



AP/Wide World

Bad Neighborhood

Government, industry face challenges combating cyber-terrorists

By John Dunn



Thomas Noonan (left) and Christopher Klaus say cyber-terrorism and cyber-threats are new weapons of mass destruction.

The world Tom Noonan knows hasn't changed since Sept. 11, but Americans have changed their perception of the world. "For someone who travels as much outside of the U.S. as I do, the world is a pretty dangerous place — and it has been for a long time," says Noonan, chairman, president and chief executive officer of Internet Security Systems in Atlanta. "What has changed significantly is the awareness that the world is not a safe place."

Through cyberspace, Noonan daily encounters the world's meaner side — its cyber-terrorists.

"The Internet has always been a bad neighborhood," says Noonan, ME 83.

The Sept. 11 terrorists revealed a surprising familiarity with computers, the Internet and encrypted messages.

"Information technology pervades all aspects of our daily lives," says Tom Ridge, appointed by Presi-

dent George W. Bush as director of homeland security. "Disrupt it, destroy it or shut it down, and you shut down America as we know it."

In October, the Bush administration named Richard Clarke, former national counterterrorism coordinator under President Bill Clinton, to be the president's special adviser for cyberspace security.

Noonan applauds Clarke's appointment, observing that the govern-

ment is a behemoth that will have difficulty battling cyber-attacks.

"Cyber-terrorism and cyber-threats are the new weapon of mass destruction," Noonan says. "What isn't necessarily making the front pages is the fact that billions of dollars are being illegally transferred along industrial espionage and mafia networks, companies are being compromised and privacy is being compromised."

"The network is the front door to our businesses and our entire command and control system — whether it's our emergency services, power grids, oil and gas distribution or financial services system. Washington has clearly stipulated that one of the biggest concerns is cyber-terrorism."

Clarke has called for creation of a secure government network, called Govnet, for critical government functions. It would be inaccessible to commercial or private networks. If approved, the project would cost billions and could take years to build.

Christopher W. Klaus, founder and chief technology officer at Internet Security Systems, says it is good that the government is now very aware of cyber-terrorism.

"It has become a priority," Klaus says. But he doubts that passing legislation that would require industry to disclose Internet

security strategies or safeguards is necessary.

"I was in Washington talking to quite a few congressmen about this issue," Klaus says. "While they realize that the government has some serious work to do, my concern is they were concerned from a legislative perspective. I doubt that creating additional laws is what industry needs. The government should take care of its own back yard first and be a good example."

Klaus said the problems facing the government are common to industry and the average consumer with a personal computer.

"What's interesting about the Internet is that it's the same standard for everyone," Klaus says. "The same technological issues that face the government face corporations."

In recent months, the Internet has seen increasingly vicious and sophisticated viruses and worms — the Code Red and Nimda viruses bypassed every antivirus system and firewall.

An individual consumer could protect a personal computer at home against hackers and viruses for under \$100 a year, Noonan says.

Defense against cyber-terrorists, hackers and evolving viruses is becoming essential for the business community.

"How secure are businesses from a cyberspace perspective?" Klaus asks rhetorically. "They are wide open. When we are brought in for the first time, most companies find we can go through the Internet into their internal network and basically, we

could steal all of their valuable information — that includes customer databases, strategic plans and research and development data.”

Klaus compares security in cyberspace to security in the world at large.

“The biggest issue surrounding security for businesses comes down to awareness and education on how to lock the doors and make sure that the communications are done in a fashion that hackers, intruders, even internal disgruntled employees can’t compromise them and espionage doesn’t take place,” he says.

“Are you going to get rid of all risks? No. It’s very similar to physical security. Do banks still get robbed today? Yes. Would they get robbed more if they didn’t have guards, locks and safes? Absolutely yes.”

Most businesses in the United States operate at an Internet security level ranging from zero to three, Noonan says.

“The goal is not to get to 10 tomorrow. If you can get to eight or nine, you have practically flawless protection,” Noonan says. “It’s not any different than putting locks on the doors of your house. Because the awareness of physical threats is so manifest in our society, we not only put locks on the doors, we have alarm and monitoring systems.”

Internet privacy and Internet security are not at odds, Klaus says.

“Privacy is boosted by good security,” he says. “You can’t have good privacy if you don’t have good security.” **GT**

Designing for the Future

From skyscrapers to “smart buildings,” architects are re-examining their craft

By Maria M. Lameiras

Architects are struggling with the aftermath of the Sept. 11 terrorist attacks on a variety of levels, from issues of fire and life safety to high-tech smart buildings and the social consciousness of the architecture community. Georgia Tech Dean of Architecture Thomas Galloway says it is difficult to foresee what the impact of the World Trade Center collapse on architecture will be, but he expects insurance companies will play a significant role in the size and type of buildings that are constructed in the future.

“Because the World Trade Center towers were unique, it is hard to generalize from those buildings the impact on the broader architecture of the United States,” says Galloway.

“One of the most interesting things I’ve heard recently is about the role of insurance companies in placing higher standards for designing a structure in order to protect their investment or reduce their liability.

“You used to be able to have coverage for buildings, as they had at the World Trade Center, on acts of God and acts of terrorism. In future scenarios, that’s not going to be possible. There isn’t going to be any insurance anywhere you can buy that is going to give that kind of coverage.”

Insurance companies are also driving a push to decide what to do on the disaster site, says Ellen Dunham-Jones, director of Tech’s architecture program.

“There are already drawings through design development of what to put on that site. Before insurance companies will release any funding they have to have an idea of re-



Thomas Galloway: Insurance companies may influence architecture in the future.

placement cost, so there have already been drawings done for replacement buildings without time for adequately reflecting on what should happen on that site — it’s caused considerable criticism within the architecture community,” Dunham-Jones says.

Architecture professor Russell Gentry is “dismayed” that discussions have progressed so far on what should be done at the site.

“I think what we are going to do everywhere else

is the more appropriate question,” Gentry says. “If you really believe the world has changed in a profound way, the question really is what do you do for the rest of us?”

Gentry wonders what psychological impact the attacks will have on the way architects design buildings.

“It is important to realize that architects and engineers are licensed professionals who have to put life safety requirements in each design. We put our stamp on every drawing and sign our names over the stamp testifying what we are doing is safe,” Gentry says.

“That act is somewhat profound, I think, in the sense that you have to design for every credible thing that can be quantified. With the World Trade Center towers, science can’t really even begin to quantify what happened to those buildings.”

Numerous questions have arisen since Sept. 11 regarding the safety of tall and super tall buildings.

“There have been questions from how wide do the stairs have to be to what other types of sensing devices are we going to have to include, what



Ellen Dunham-Jones: "The tragedy of the WTC towers has been a wake-up call. A lot of the things architects have been talking about for the past few years — very fashionable kinds of things, issues of shape and style — suddenly seem so irrelevant."

smarter buildings are we going to have to design to buy time for people to escape in the event of a disaster," Galloway says.

Roозbeh Kangari, director of the building construction program at Tech, says possibilities include sensors in air conditioning systems to detect the presence of chemical or biological agents and sensors on beams to detect danger of collapse.

"Buildings are so vulnerable that it is almost impossible to protect them," Kangari says. "One thing we may see as a result of this is the design and construction will require more input — from building management, the fire people, the liability groups, engineers, architects — to make sure the final product, which is the

building, serves the purpose of the occupant, which is safety. That becomes the goal."

Discussions of construction and building systems have generated more left-of-center ideas that are now being given a measure of credence.

"There has been a lot of discussion on everything from personal jet packs to fly yourself to safety out of a tall building to outfitting buildings like you would an ocean liner with inflatable safety boats," Dunham-Jones says. "There is a lot of out-of-the-box thinking going on now. Some of it was never taken seriously before and is kind of getting a re-airing and being looked at with some seriousness now."

One aspect of building safety sure to take the fore-

front is a new round of fire safety codes, Dunham-Jones says.

"The Great Chicago Fire is still seen as the last really great fire disaster that triggered real systemic changes in architectural design. There have been modifications, but fire engineering, in general, in the United States is basically a 100-year-old system," she says. "The assumption is that architecture has made strides in designing for earthquakes and other kinds of natural disasters, but it was assumed we had fire under control.

"Meanwhile we have had many new materials coming out. There's far more use of various kinds of composite materials, plastics and things that tend to get studied for their fire-resistant values in

isolation but not always in the kind of assembly of contemporary modes of construction."

New methods of research into fire engineering are available, but are not yet widely used, she says. "With digital simulation, we can model fire behavior in ways that we have not been able to do very well before. We now have tools to allow for very sophisticated ways to do that, but there still aren't very many people using them."

Charles Rudolph, assistant professor of architecture at Tech, doesn't think Americans would want to live in a country of "terror-proof" structures, essentially a bunker existence.

"The decision makers who have to pay for these buildings will be the ones who determine how and

whether they put a stake in the image of the tall building," Rudolph says.

In architecture circles, the sabotage of the towers may have an impact similar to the demolition of another famous structure, Dunham-Jones says. Minoru Yamasaki, chief architect of the WTC, also designed Pruitt-Igo, a highly

acclaimed public housing project in St. Louis that was demolished in 1972 because it had deteriorated so extensively since it was built in 1955.

"That image of the demolition of Pruitt-Igo symbolized the end of the ideal of modernism and the beginning of the ideal of post modernism," Dun-

ham-Jones says. "I very much wonder if the images of these towers being destroyed is going to shift discourse again. I think we already see this country coming together in a crisis, community building, and I'm wondering whether we are going to see a lot more architecture students becoming very interested in

architecture's ability to serve its community.

"The tragedy of the WTC towers has been a wake-up call to architects. A lot of the things architects have been talking about for the past few years — very fashionable kinds of things, issues of shape and style — suddenly seem so irrelevant.

An Industry Disrupted

Airlines struggle with security measures

Pilot Tom Allen, AE 79, looked down at the World Trade Center site as he prepared to land an American Airlines jet at La Guardia Airport on Nov. 1.

"It was still smoking. The smoke was still at 1,000 feet. It is quite shocking, really hard to grasp," he says.

Allen, who lives in Herndon, Va., also has seen the devastation at the Pentagon. "Until you see it in person, you can't grasp the magnitude of it. I drove by the Pentagon the week after the attack. I almost drove off the road."

Four American flight attendants Allen had worked with died at the Pentagon when their plane was crashed into the building.

Allen works out of O'Hare International in Chicago and commutes from Virginia. He was set to fly from Chi-

cago to Washington, D.C., on Sept. 11. He knew something terrible had happened when he learned all U.S. air travel had been suspended. He stayed at a co-worker's home until he could return to Virginia on Sept. 14.

American Airlines prohibits pilots from discussing security measures or how their jobs have changed since Sept. 11. Another Chicago-based pilot, who graduated from Georgia Tech with an aeronautical engineering degree in 1982, would only speak on the promise of anonymity. A Marine veteran, he favors arming pilots.

He adds that while necessary, heightened security at airports can be as frustrating for pilots as the public. His bags have been searched on more than one occasion as he prepared to board a plane with four flight attendants in tow.

Delta Air Lines pilot David Aug-

spurger, AE 85, agrees that there must be a better solution than searching the cockpit crew's flight kits.

"There ought to be a fingerprint scan or a retina scan. There ought to be something foolproof in the parking lot, something other than checking our employee IDs," Augspurger says.

He says airport security needs to be handled by "qualified people, people who are interested in being there. It has been an entry-level job at minimum wage. It needs to be almost at the FBI level."

He is "absolutely" in favor of arming pilots who would use weapons as a last resort when confronted in the cockpit. Protection of the Delta cockpit crew already has improved, Augspurger says, thanks to barred doorways, which can be a bit isolating for the flight staff but are a necessary safety measure. **GT**



To that extent, the towers' collapse, the tragedy of that, and the recognition that architects are sort of implicated in that tragedy, is a wake-up to call to what is it we really care about."

Whatever changes come, Rudolph expects they will be gradual, unlike the speed of airport safety legislation.

"The cost of tall buildings is already 60 to 65 percent for the guts and the structure," he says. "We like to joke that we have 30 percent to play around with for the skin and fittings. But if the construction cost, including all of the specialties that may now be required, jumps to 75 percent of the building's cost, the architect then becomes the fashion designer. So I'm very curious to see what the response is from the societies and material organizations that determine our standards."

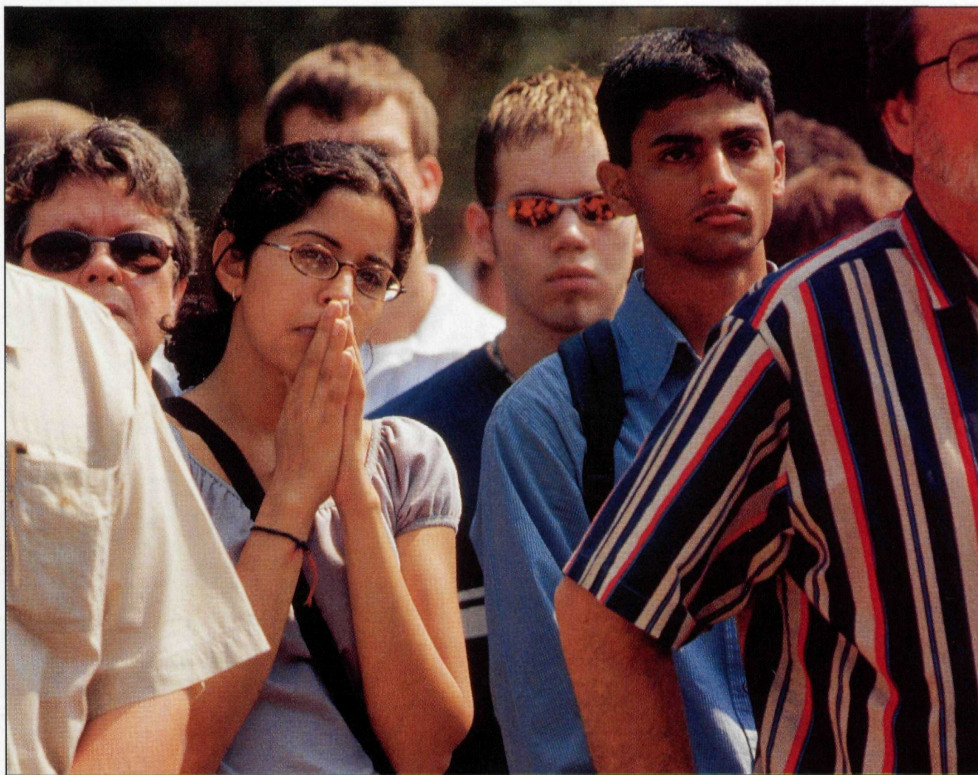
Dunham-Jones says the attitude toward tall buildings mirrors the decrease in commercial air travel since Sept. 11.

"There have always been people who were afraid to fly. This has enlarged those numbers, but there are still people flying. There have always been people afraid of tall buildings and this may increase that number, but the urge to build tall has been going on since the pyramids," she says.

"That is a much stronger urge than this incident, as tragic and horrific as it was. It will have a shadow, but this is not the end of all tall buildings." **GT**

Few Fears on Campus

Tech's international community has not felt 'that much difference' since the attacks



Caroline Joe

Although about 40 percent of graduate students and 50 percent of doctoral students at Georgia Tech are international students, there has been little effect on the student population as a result of the Sept. 11 incidents, says Harvey Charles, director of Tech's Office of International Education. Of the 2,482 international students on campus, only one returned home because of family concern over the events involving the United States.

"There was concern expressed among the students when Sen. Diane Feinstein announced her proposal to put a moratorium on the issuance of student visas, but that was the only instance in which the students registered any distress," Charles says.

"I think the situation has been very well handled at Georgia Tech. The administration has been on top of it from the day of Sept. 11 and have demonstrated great skill to calm

the fears and concerns of the students. My office issued statements that things were under control and that students could come talk if they needed to."

Charles finds it telling that a meeting convened for international students to voice their concerns was sparsely attended.

"I think it shows that our students felt comfortable enough here not to have to come to that meeting," he says.

Barbara Hall, associate

vice president of enrollment services for Georgia Tech, says the withdrawal of the student visa moratorium proposal means there will be little difference in the application process for international students.

"There probably won't be that much difference, time wise, in the processing of student visas. There may be an increased screening process, but that will go on before they get to us," Hall says.

"We are feeling relatively secure that there will not be a big change at the undergraduate level in recruiting and enrolling international students. If we have an international student we expect to enroll and they don't register, we report it to the INS, but we have always done that." **GT**

Campbell's Sensor

Now everybody's interested in GTRI scientist's work

By Kimberly Link-Wills

For more than a decade, research scientist Dan Campbell, virtually unnoticed by the outside world, has been working in his lab at the Georgia Tech Research Institute. Since the Sept. 11 terrorist attacks, his work has attracted the attention of government agencies, lawmakers and the media. Campbell, PhD Chem 82, has been inundated with calls as word has spread that he is developing a handheld sensor capable of detecting the presence of biological or chemical weapons in the air or on an envelope.

The parts are neither state of the art nor expensive — a laser like one in a CD player, a waveguide and a USB camera that had been attached to a computer monitor — less than \$100 worth of equipment.

Georgia Sen. Max Cleland held up the most vital component — the sensor chip — on the floor of the U.S. Senate in the wake of the attacks on New York City and Washington, D.C., and said the detector was needed in every airport in the country.

A few days later an aide to Georgia Rep. Bob Barr stopped by Campbell's office. "He was asking how soon we could have this done, how much money we needed to get it to the manufacturing stage. There's a big rush now," Campbell says.

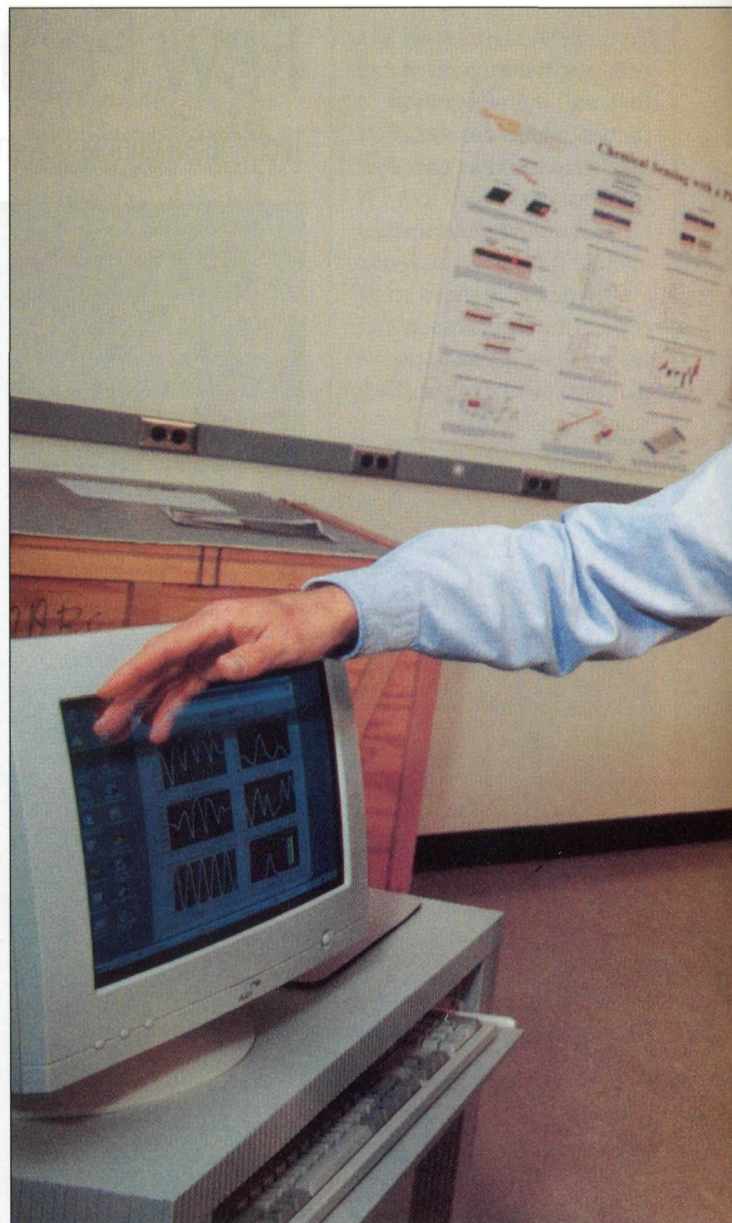
In fact, defense and military departments have been aware of Campbell and his work for some time. Over the years, most of his funding has come from the federal government.

Campbell's original grant was aimed at farming, not bioterrorism. "The first funding was from the Department of Energy for a feedback system to monitor the amount of anhydrous ammonia being injected into the ground. The sensor would sit right on the back of the tractor.

"We've had other grants along the way. We had a company that samples groundwater and wastewater. The state of Georgia has been funding salmonella work, mainly for chicken contamination," he says. "There are unlimited possibilities for its use. The platform is universal. It's just a matter of tailoring the chemistry for the application you want."

Campbell envisions his device being used in hospital emergency rooms.

"When they take your blood and send it to the lab, the lab would be the thing that is in your hand. We were also looking at groundwater monitoring for contaminants in water



Tech's Dan Campbell explains his sensor for a visiting TV crew.

at hazardous cleanup sites.

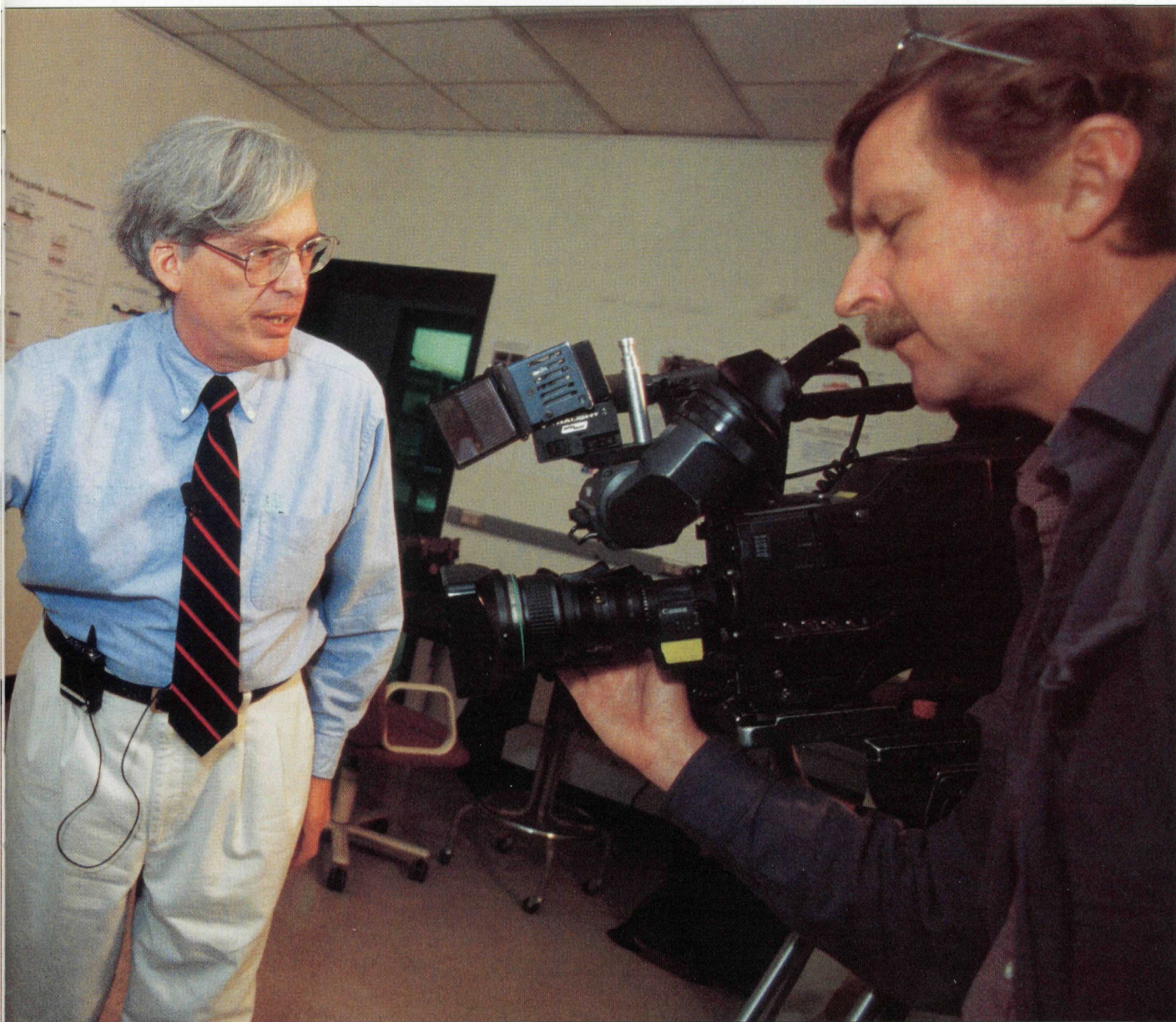
"It could be used in process control in factories. We've had money for the last several years for food safety where we're looking for salmonella and e coli in food products. You could think of it being used in a restaurant or a grocery store deli."

Campbell says his sensor is designed to be both affordable and easy to use.

"There isn't much out there now. Some of them are so complicated to use and very expensive, on the

order of tens to hundreds of thousands of dollars. It's not like everybody could have one. The one I'm talking about every police car could have, every fire department could have. You won't have to be a scientist to use it."

The sensor simply breathes in an air sample, takes in a water sample or touches an object, then tests it for the presence of one of the compounds and determines whether the levels are hazardous. "It is a direct method of testing,



"There are unlimited possibilities. The platform is universal. It's a matter of tailoring the chemistry for the application you want."

in real time. It takes seconds to minutes to work. The idea behind the chemical warfare would be that it could be used by battlefield soldiers and by first responders."

There are still some problems to work out, Campbell says. "It's all solved except the electronics, and that's a little bit out of my field. I'm an organic chemist. Right now it's hooked up to a computer. You don't want to have a handheld sensor and have to carry around a

computer with it. The whole idea is to make it self-contained.

"This is one of those really big efforts now because the government is really behind this. There's a push to get it done in the short term," Campbell says.

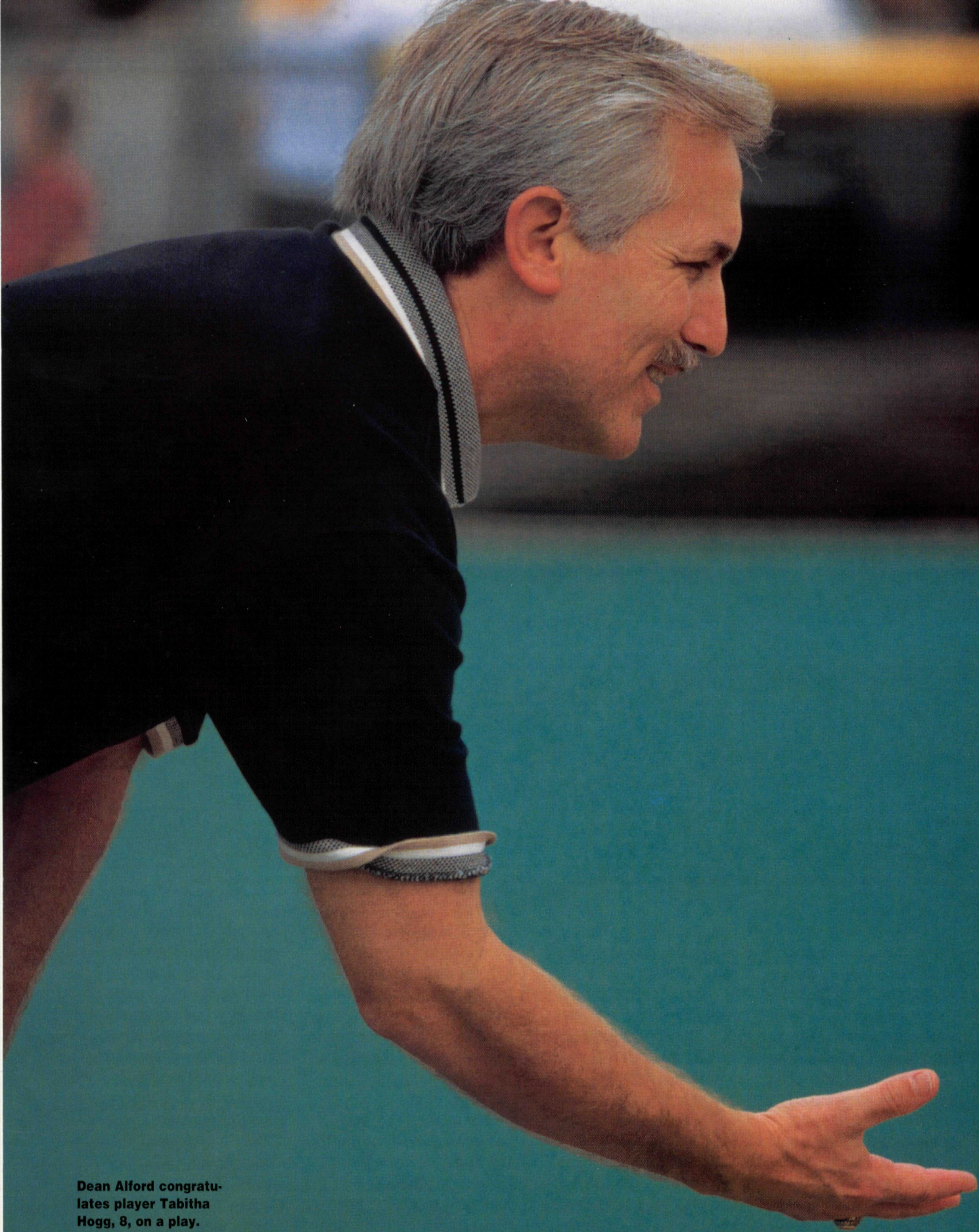
The Sept. 11 terrorist attacks hit close to home for the Brooklyn-born Campbell, who attended high school in New York City and received his bachelor's degree from Syracuse University. His mother lives in Queens, and his sister used

to work in the World Trade Center. When he saw the devastation on television, Campbell told his wife, Candice McCloskey, PhD Chem 85, that time was of the essence. He had to finish his sensor.

His research group is too small to work around the clock, but he expects financing to increase dramatically, enabling him to hire a team. "It's really going to take something like a mini-Manhattan Project," he says.

Campbell received his undergraduate degree in forestry. He realizes now that his move to organic chemistry was a good one. "I feel like maybe this is what I've been destined to do all along. This is my chance to do something good for humanity."

He isn't interested in money or fame. "I'm more interested in making it work for the world. My 9-year-old daughter thinks I'm going to save the world. I don't want to let her down." **GT**



Dean Alford congratulates player Tabitha Hogg, 8, on a play.

Miracle Field

Dean Alford helped build first-of-its-kind diamond for disabled kids

By Maria M. Lameiras

Photos by Phil Skinner



When 11-year-old Lauren Gunder stepped up to the plate, she took a buddy with her.

The young baseball player suffers from a rare condition called osteopetrosis and is almost completely blind. Her buddy told her when to swing as the pitcher tossed the ball over the plate. Lauren's bat connected with the ball and sent it sailing through the infield. Lauren sat in her wheelchair and her buddy pushed her to first base as the infielders and their buddies fielded the ball and tossed it to the first baseman.

Lauren and the other players are members of the Rockdale Miracle League, a youth baseball league for children with varying physical and mental disabilities. They play at McMiracle Field, a specially designed baseball field in Conyers, Ga., built through the efforts of Georgia Tech graduate Dean Alford, the Rotary Club of Rockdale County, Georgia, and The Ronald McDonald House Charities.

Alford, EE 76, says the idea for the field was born with the Miracle League in 1997.

"A boy in a wheelchair showed up to play in the youth baseball program. One of the coaches drafted the kid onto his team and he played, but they soon realized that it was difficult for a disabled player to play on a traditional team," Alford says.

In the spring of 1998, coaches and parents orga-

"I watched these teams play and I was incredibly moved. I immediately wanted to find a way to help out."



At McMiracle Field, Drew Daniels takes a swing at the ball while his "buddy," Amber Thornburgh, holds his wheelchair steady.

nized a special game for disabled players. "Twenty-eight kids showed up. They started playing together and that started the Miracle League."

Alford says leveling the playing field between the players didn't solve the problem of the real playing field.

"On a traditional field, the bases would tip wheelchairs over, the automated chairs would bog down between bases and, many times, when a player with limited strength threw the ball it would just hit the ground and stop," he says.

Three men involved in the Miracle League approached Alford, a former five-term

Georgia state representative who was coaching his son Chandler's 11- and 12-year-old youth baseball team, to help the league parents raise \$5,000 to \$8,000 to modify the fields.

"I watched these teams play and I was incredibly moved," Alford says. "I was impressed with the enthusiasm of the players and the excitement in their eyes. I immediately wanted to find a way to help out."

Alford researched the demand for the Miracle League and found there are more than 50,000 children in the Atlanta area with physical or mental disabilities that

would prevent them from participating in a traditional league.

He approached the then-president of his Rotary Club, Homer Lewis, to pitch the idea that the service organization should get involved in the project.

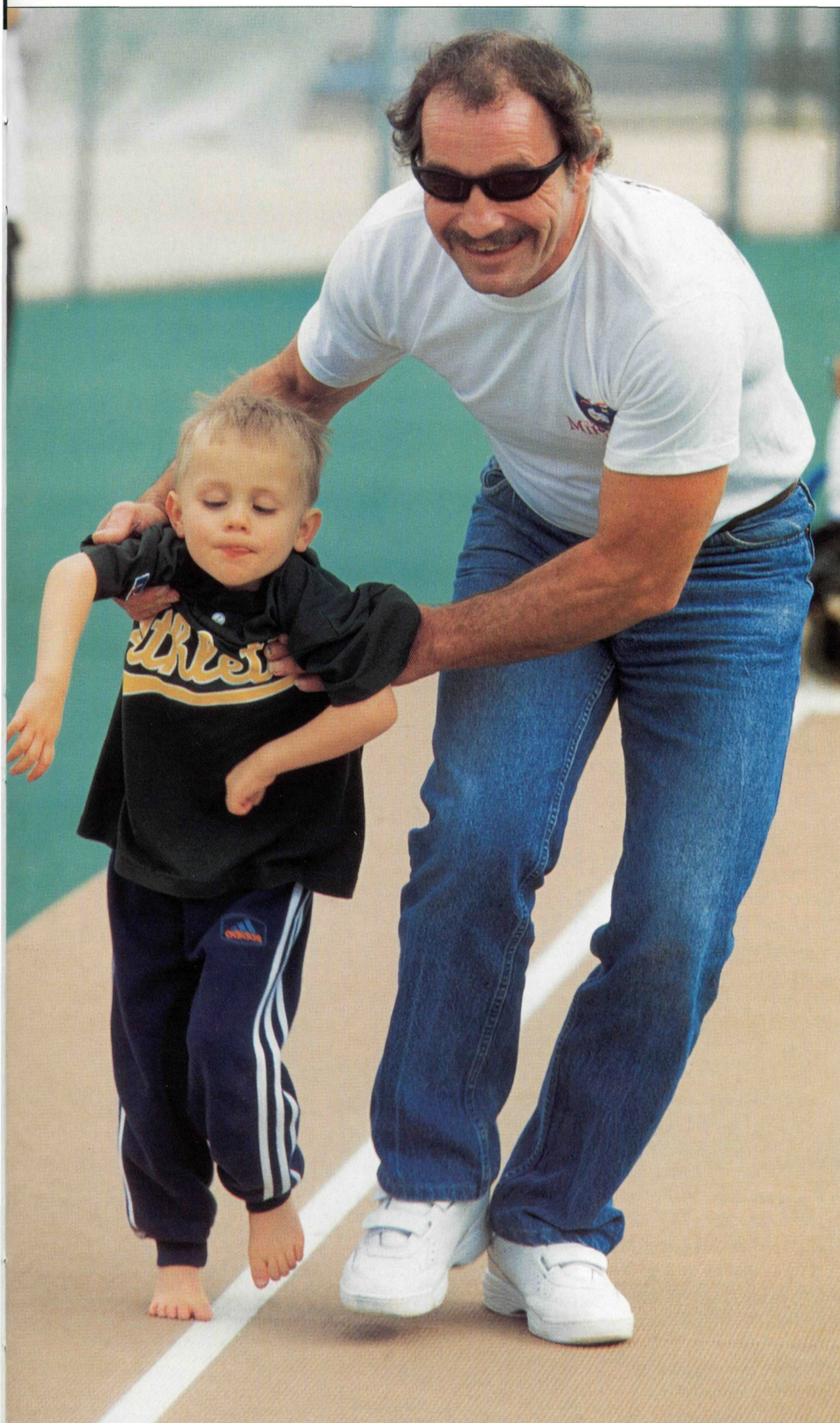
"When Homer learned about the project, he wanted to build a baseball complex for disabled children unlike any other that had ever been built," Alford says.

After extensive research, with input from parents and designers, a four-field complex was designed that would present no barriers to children with any disability.

Three of the fields are

traditional, but the fourth is covered in a special rubberized surface called Mondo, the same material used for the track-and-field surfaces in the Paralympics. The base paths, baselines and bases are all embedded into the field surface and the field is surrounded in a waist-high chain-link fence to contain stray balls. The dugouts are large, fenced-in enclosures that resemble batting cages. They are level with the field and large enough to easily accommodate several wheelchairs, as well as ambulatory players.

The parking lots are level with the sidewalks surrounding the fields, with no curbs to impede wheelchairs and,



Benny Henderson helps his grandson, Devon Henderson, to first base during a game.

unlike traditional facilities, the bathrooms have more wheelchair-accessible stalls than standard ones. Even the concession counters are at wheelchair level, and the concession and picnic areas are covered to protect children who are sensitive to the heat. The fields are lighted at a higher level than traditional fields so kids with vision impairments can see during night games.

"When we got finished designing this, I knew we had a project upwards of \$500,000," Alford says. "I went to my Rotary Club in January of 1999 and I asked the 40 members there to raise half a million dollars for this project. They didn't even bat an eye."

The club enlisted the help of the Conyers Rotary Club and formed the Rotary Miracle League Fund Inc. to oversee the fundraising efforts. The campaign was launched in the spring of 1999 and Alford took a request for \$250,000 to Ronald McDonald House Charities.

"They gave us \$350,000 and it was then that we knew the project was a go," Alford says. "Individuals and companies in our community stepped up and put up additional funds for the complex and we broke ground in October 1999."

As the complex began to take shape, construction costs — including 80,000 square feet of concrete, the special surface for the field and the elaborate lighting needed — shot up to

"We have kids doing things at a level that doctors said were impossible for them."



Dean Alford (above) coaches a player. RIGHT: Alford exchanges "fives" with Drew Daniels as Amber Thornburgh pushes him toward home plate. FAR RIGHT: Zachary Ross watches the action.

\$850,000. The Rotary Miracle League Fund borrowed the money to cover the difference and the project was completed in the spring of 2000.

On April 16, 2000, the McMiracle Field was dedicated and became the home field for more than 200 children from around metro Atlanta who play in the Rockdale Miracle League.

"Kids come here from Gainesville to Griffin," says Alford, adding that the Rotary Club is still raising \$185,000 to pay off the remaining construction loans.

As a result of national media attention, groups in 36 cities across the country are forming Miracle Leagues. As president of the Miracle League Association, Alford promotes the program and hosts groups visiting McMiracle Field to learn how to construct their own facilities.

"When I started, I thought for sure somebody, some-

where had built something like this before, but there was nothing," he says.

"A guy from New York called me because some people had asked him to do a similar project in the New York area. He wanted me to justify why they should do this for children with disabilities. I asked him, 'Do you let 5- and 6-year-olds in your Little League play on fields with 90-foot baselines and 60 feet from the pitcher's mound to home plate?' He replied, 'Of course not.'

"Then I told him we'd been adjusting baseball fields forever based on the abilities of the kids at each level, so why shouldn't we adjust them to make sure that all kids of all abilities get to play baseball? This gives them a degree of normality they never would have had an opportunity to achieve otherwise."

Alford regularly attends games during the league's spring and fall seasons, and his daughter Jacque, 11, is a





Miracle League buddy, one of more than 300 volunteers who assist players on the field. Son Chandler, now 15, rebuilt a wooden play structure with swings and slides and created a play area at the complex as his Eagle Scout project.

Alford says the Miracle League has given him a new perspective and appreciation for children of all abilities.

"The thing I have learned from these kids is that when you give a kid a ball, no matter what their abilities or disabilities, they will play with it, they will play together with other kids and they will try to do things they have never tried before," he says. "Sports are important for kids of all ages and abilities and we have kids who are doing things at a level that doctors have said were impossible for them.

"Seeing them so proud of themselves and so excited, seeing the smiles — that is worth all the effort." **GT**



Call of the **Wild**



Lloyd Johnson went from Marine officer to wildlife artist

By Maria M. Lameiras

Photography by Gary Meek





Lloyd Johnson has come a long way since mounting a fish for his first customer. His shop is now crowded with exotic specimens.

"I didn't intend to do big game, but it just sort of happened," Johnson says, adding that when people began to inquire if he handled such animals, he acquired a few skins to make display models to show what he could do.

ON A RECENT MORNING, BRIAN ARBOUR, IM 60, and his hunting companion, Harvey Webb Jr., came in from Atlanta to talk to Johnson about mounting two black bears they'd bagged on a hunting trip to Canada.

"Hunters are a small group and we use a small group of taxidermists," Webb says. "When hunters find someone good, it's word of mouth."

"I've tried all kinds of advertising," Johnson says. "Word of mouth is best. I don't even have a Yellow Pages ad anymore."

In his studio now are a young male lion shot in Tanzania and a bongo and

in Cameroon, all brought in by one client. The 14-foot Nile crocodile in the studio's display area and a number of other animals in the studio also belong to the same hunter and Johnson is working on a reproduction of a hippopotamus using molds of real tusks to be mounted in the mouth. The hippo will occupy a splash scene with the crocodile for a trophy room the hunter is constructing.

Johnson has done many exotic animals — baboons, pumas, leopards — but the oddest thing he's ever mounted wasn't an animal.

"The Anthony Wood Products plant here in Washington brought in the first two two-by-fours they ever ran and wanted them mounted," he says.

Good-humored about the taxidermy jokes he has endured and the telephone calls he fields from people wanting their taxes done, Johnson says



colonel on active duty in the Marines? Maybe so. It's a totally different existence, but if you enjoy what you're

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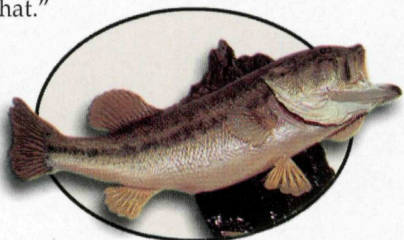
best. I don't even have a Yellow Pages ad anymore."

AN ATTACKING CROCODILE, SNARLING wolves and an African lion compete for space with black bears, wild boars and water buffalo in Washington, Ga. Ferocious big game beasts crouch among woolly mountain goats, white-tail deer and nesting ducks in the studio of alumnus William Lloyd Johnson III, an ex-Marine who 12 years ago converted a ladies' dress shop on the town's historic square into a taxidermy business — Master's Wildlife Services.

Surrounded by a menagerie of animals that he has artfully mounted, Johnson first chose the town where he wanted to live, then his profession — one he admits might not be highly esteemed outside hunting circles.

A high school football player who briefly played on the Georgia Tech team, Johnson graduated in 1976 with a degree in industrial management and a commission as a second lieutenant in the Marine Corps through the Naval ROTC program. He spent more than 12 years as an officer with the Marines before a bad knee from football and an early diagnosis of arthritis at age 31 earned him a medical discharge at the rank of captain in 1989.

"I was looking to take care of a wife and three kids and I wanted to come back to Washington," says Johnson, a native of Aiken, S.C., who has extended family in the small Georgia town. "I figured that I needed something with flexible hours because I realized the way things were going for me physically, I was going to need that."



JOHNSON BEGAN RESEARCHING THE TOWN he wanted to make his home, checking with the Department of Natural

Resources and discovering that a large number of people came into Wilkes County and neighboring counties to hunt and fish, often doubling the populations of the small towns and counties on opening day of the various hunting seasons.

"I knew I wasn't going to make my money from the people who lived here because the population was just too small. I knew I was going to have to make my living through those other folks," Johnson says.

He contemplated opening a gun store, but there was already one in town. Guiding groups of hunters and fishermen was out because of his physical limitations. Then he considered taxidermy.



I FIGURED THE RESEARCH I'D DONE WITH the DNR had shown that the majority of the deer harvest for the state was done in counties within 50 miles of Washington. They were killing 50,000 deer every year within 50 miles of here. If just 5 percent of those are mounted, that's still about 5,000 deer a year. Then you figure what percentage of that could one studio do? I figured the odds were pretty good," he says.

He compiled a list of all the taxidermy degree programs at institutions around the United States. He decided the two top programs were at colleges

in North Carolina — Montgomery Community College in Troy and Piedmont Community College in Roxboro.

Johnson completed the one-year programs at both of the colleges, graduating from one in 1990 and the other in 1991. In April 1991, he opened the doors of Master's Wildlife Services on the square in Washington after remodeling the space.

"Thirteen-foot pink walls just weren't working for me," Johnson says, grinning.

To bring in business, Johnson set up pieces in his shop and in neighboring businesses willing to display them. He'd already started to build his reputation in taxidermy circles by winning second place at a statewide show with a water moccasin he'd mounted. And he mounted several pieces shot by himself and family members.

Still, it was two full months before he got his first paying job — mounting a fish for a local fisherman.

"It was a rough way to start out, particularly in a little town where not too many people know you," Johnson says.

He advertised with a billboard and listings in the phone book. Slowly but surely, with word of mouth and winning competitions as his most reliable advertising, Johnson began mounting more and more pieces, mostly fish and deer, until customers began bringing in more exotic animals — bears, moose, wild sheep — so Johnson got an import/export license.





TERRY BLUM

Tedd Munchak Chair
in Entrepreneurship



BARBARA BOYAN

Price Gilbert Jr. Chair
in Tissue Engineering



JOHN A. COPELAND

John H. Weitnauer Jr. Technology Transfer
Chair in Telecommunications

Academic Pinnacle

Endowed chairs enable Tech to recruit faculty at the top of their disciplines

By Karen Hill

The Southern invitation to “pull up a chair and stay a while” has taken on new meaning at Georgia Tech, which has filled 29 new endowed chairs. But no one’s sitting down on the job. Tech’s endowed professors are on the cutting edge of research and teaching. These chairs are among 54 pledged to the Institute by donors in the five-year Campaign for Georgia Tech that ended in December 2000, nearly tripling the number of endowed faculty chairs.

Tech has a total of 87 chairs, including 16 Georgia Research Alliance chairs.

“Our new endowed chairs are allowing us to attract the services of leaders who can help take Georgia Tech to the next level,” says Tech President Wayne Clough. “Most of the chairs are filled by outstanding individuals from other institutions or industry, but some are used to recognize and retain talented faculty who have risen from our own ranks. The cumulative accomplishments of those we have been able to add into the ranks of endowed chair positions is simply remarkable and more are yet to come.”

The 54 new chairs include a dean’s chair in the College of Computing and six school chairs endowed at \$2.5 million each, and two Institute chairs, 35 faculty chairs and 10 GRA Eminent Scholar chairs endowed at \$1.5 million each. GRA chairs are created in areas of academic endeavor to encourage economic development and are endowed for \$750,000, an amount that is matched by the GRA.

Being named to an endowed chair is considered the pinnacle of an academic career, says Marta Garcia, assistant vice president for development. In addition to prestige, it brings an annual stipend of about \$75,000 — or 5 percent of

the \$1.5 million principal — that the professor can use as he or she sees fit to further research or teaching.

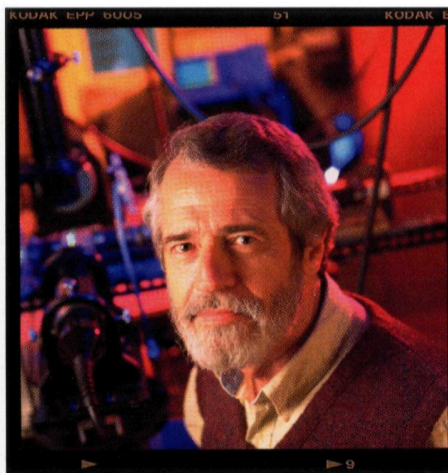
That, Garcia notes, relieves the professor of the time drain and uncertainty that comes with chasing after grant funding. The Institute continues to pay each professor’s salary, separate from the endowment funds.

“Besides the prestige that is associated with an endowed chair at a place like Tech, the endowment gives one the opportunity, the luxury, of making agile choices in one’s research program. In my case, the result is a work style — and a related potential for creating impact — that is no lower than, and sometimes better than, at the world-renowned industrial labs that I came from, Bell Labs,” says Nikil Jayant, who holds the John E. Pippin Chair in Wireless Systems in the School of Electrical and Computer Engineering.

Jayant describes his research focus as “one-way or two-way communication anywhere, anytime, any device and, in fact, any language” if automatic translation problems can be solved.

A Georgia Research Alliance Eminent Scholar who also directs the Georgia Tech Wireless Institute, Jayant earned his PhD in electrical communication engineering from the Indian Institute of Science in Bangalore, India, which included a year’s work as a research associate at Stanford University. After that, Jayant joined Bell Labs, where he stayed until coming to Tech. He is a Fellow of the IEEE and a member of the National Academy of Engineering.

The new chairs are scattered throughout Tech’s colleges and schools, with most reflecting the donor’s specific area of interest, Garcia says.



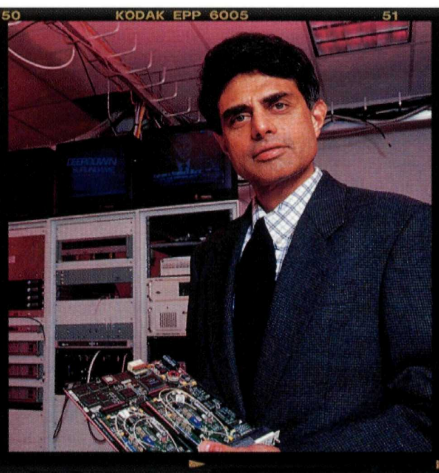
DON GIDDENS

Lawrence L. Gellerstedt Jr. Chair
in Bioengineering



MARK HAY

Harry and Linda Teasley Chair
in Environmental Biology



NIKIL JAYANT

John E. Pippin Chair
in Wireless Systems

New Chairs Since the Campaign

One college and three school chairs have been awarded since the Campaign for Georgia Tech ended:

- **Peter Freeman**, John P. Imlay Jr. Dean's Chair in the College of Computing
- **William B. Rouse**, H. Milton and Carolyn J. Stewart School Chair in Industrial and Systems Engineering
- **Roger P. Webb**, Steve W. Chaddick School Chair in Electrical and Computer Engineering
- **Ward O. Winer**, Eugene C. Gwaltney Chair in the School of Mechanical Engineering

School chairs in the process of being established are the Wallace H. Coulter Chair in Biomedical Engineering, Andrew T. Hunt Chair in Materials Science and Engineering and William R.T. Oakes Chair in Aerospace Engineering.

New Faculty, Institute and Georgia Research Alliance chairs filled since the campaign include:

- **Arnold Stancell**, William B. Turner Chair in Servant Leadership

COLLEGE OF COMPUTING

- **James Foley**, Stephen Fleming Chair in Telecommunications
- **Richard Lipton**, Frederick G. Storey Chair in Computing

COLLEGE OF ENGINEERING

- **John Bartholdi**, Manhattan Associates Chair in Supply Chain Management
- **Wayne Book**, HUSCO/Ramirez Chair in Fluid Power Systems
- **Barbara Boyan**, Price Gilbert Jr. Chair in Tissue Engineering
- **William Chameides**, Charles A. Smithgall Jr. Institute Chair
- **John A. Copeland**, John H. Weitnauer Jr. Technology Transfer Chair in Telecommunications
- **Predrag Cvitanovic**, Glen P. Robinson Chair in Nonlinear Science
- **Don Giddens**, Lawrence L. Gellerstedt Jr. Chair in Bioengineering

- **Dennis Hess**, William W. LaRoche Jr. Chair in Chemical Engineering
- **Nikil Jayant**, John E. Pippin Chair in Wireless Systems
- **William Koros**, Roberto C. Goizueta Chair in Chemical Engineering
- **David McDowell**, Carter N. Paden Jr. Chair in Metals Processing
- **Ronald W. Rousseau**, Cecil J. "Pete" Silas Chair in Chemical Engineering
- **Glenn Smith**, John E. Pippin Chair in Electromagnetics
- **Chelsea White**, Georgia Freight Bureau Chair in Transportation and Logistics

COLLEGE OF SCIENCES

- **Mark Hay**, Harry and Linda Teasley Chair in Environmental Biology
- **Terry Maple**, Elizabeth Smithgall Watts Chair in Behavioral and Animal Conservation
- **Alfred H. Merrill**, Charles A. Smithgall Jr. Institute Chair

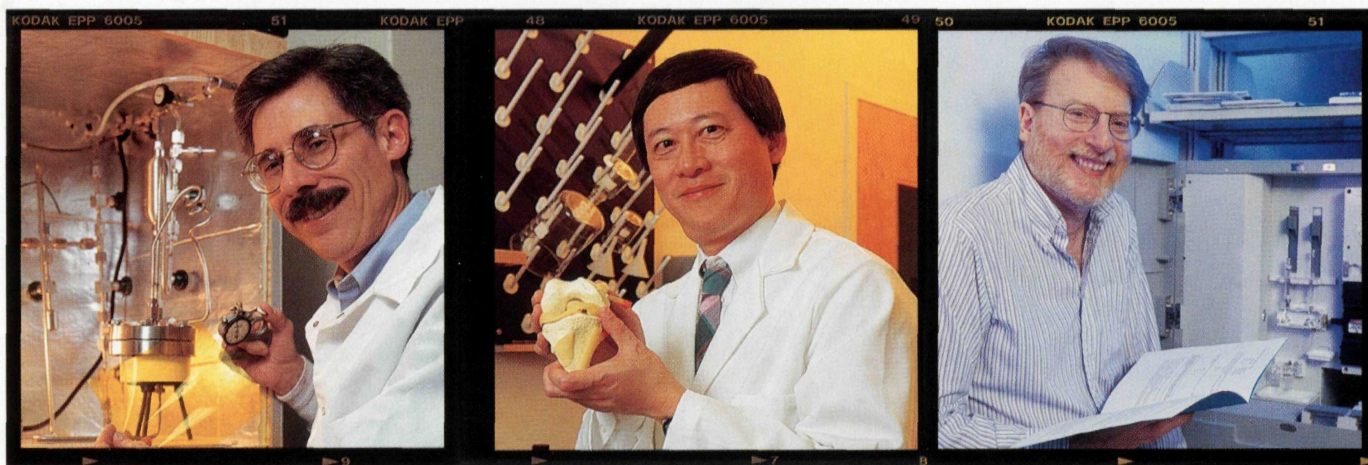
DUPREE COLLEGE OF MANAGEMENT

- **Terry Blum**, Tedd Munchak Chair in Entrepreneurship
- **David Herold**, Gary T. and Elizabeth R. Jones Chair in Management
- **David Ku**, Lawrence P. Huang Chair in Engineering Entrepreneurship

IVAN ALLEN COLLEGE

- **Jay D. Bolter**, James and Mary Wesley Chair for New Media Studies
- **Thomas Lux**, Margaret T. and Henry C. Bourne Chair in Poetry

Tech filled 16 chairs in 2001. Only two were not among the chairs endowed during the Campaign for Georgia Tech. The George W. Woodruff Chair in Thermal Systems, endowed before the capital campaign, was filled by **Ari Glezer**, who came to Tech in 1992. The Hal and John Smith Chair of Small Business and Entrepreneurship was filled by **Marie Thursby**, who joined the Georgia Tech faculty Jan. 2. Thursby comes from Purdue University.



WILLIAM KOROS

Roberto C. Goizueta Chair
in Chemical Engineering

DAVID KU

Lawrence P. Huang Chair
in Engineering Entrepreneurship

RICHARD LIPTON

Frederick G. Storey Chair
in Computing

Others, though, will allow the Institute to venture into new areas. For example, David Ku, who received the Lawrence P. Huang Chair in Engineering Entrepreneurship in the DuPree College of Management, is melding portions of the engineering and business curriculum.

Chair funding, Ku says, "has helped us to deliver a totally new program for engineering entrepreneurship. The link with the business school is in specific new courses for engineering students to learn about business and management."

Ku earned his doctoral degree from Tech in 1983 and a medical degree from Emory University the following year. He is a licensed physician in Georgia and Illinois.

He began teaching at Tech in 1986. His research focus is in three categories of bioengineering: biofood mechanics, or how blood flow can impact heart attack and stroke; biomaterials, or how orthopedic biomaterials could be used to treat arthritis; and tissue engineering, or how new organs

can be built to replace those that are diseased.

Alfred Merrill, named to the Smithgall Institute Chair in Molecular Cell Biology, appreciates the freedom to venture down any research path, no matter how insignificant it might appear at first.

An endowed chair, Merrill says, "will allow my laboratory to conduct research that we think is important, but which may not yet be a high priority for scientific funding agencies. Research projects can fall in this category when the ideas are very new, or when the basic principles are well established but their relevance to 'real world' problems has yet to be tested."

Merrill says that chair funds "will also allow more students and postdoctoral fellows to become involved in multidisciplinary research."

Merrill adds that he also appreciates a connection with the Smithgall family, well known in Georgia for nature conservation. **GT**

Return Investment

Georgia Tech reaps benefits from venture capital sector

It's a kinder, gentler version of what's usually associated with the saying, "What goes around, comes around," but that makes it no less true.

After years of encouraging the growth of a venture capital sector in Atlanta, Georgia Tech is now reaping direct rewards from that sector. One example is the newly established Stephen Fleming Chair in Telecommunications, held by James Foley, associate dean of the College of Computing and a professor in the School of Electrical and Computer Engineering.

Stephen Fleming, who endowed the chair, graduated from Tech in 1983

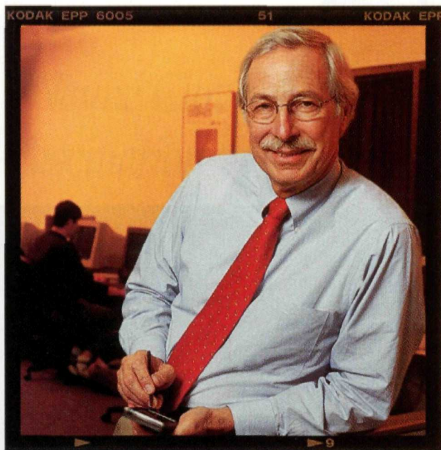
with a degree in physics. After working in several areas of telecommunications operations, he joined Alliance Technology Ventures as the second general partner in 1995 and has helped build it into a leading source of early-stage technology venture funds in the Southeast. Five of his company's investments have involved the technology transfer of Georgia Tech research.

"The strategy of creating endowed chairs to recruit the best and brightest talent from around the world is brilliant. There is clear evidence that it works," says Bill Todd, president and chief executive officer of Encina Tech-

nology Ventures in Atlanta. "The best research superstars recruit the best graduate students, who become the entrepreneurs to commercialize the discoveries from the laboratories.

"That is precisely what venture capital is looking for — new ideas and bright talent to take those new ideas forward into the marketplace."

In addition to supporting business incubators and making professors accessible to people with good ideas, it helps that many science entrepreneurs in Atlanta started their college careers at Tech, says Charles Mosely, IE 65 and general partner with the venture capi-



JAMES FOLEY

Stephen Fleming Chair
in Telecommunications

tal group Noro-Mosely Partners.

"Tech is a hard school and taught you how to work: 'Get with it or get out.' That's a pretty good lesson for someone to learn at a young age," Mosely says.

Foley says being named to an endowed chair is both a personal boost and a challenge.

"Holding a chair says to me that my institution has confidence in my ability to use the earnings wisely, in ways that will continue to enhance the stature of Georgia Tech," Foley says. "And it challenges me to do my best to demonstrate that the confidence is well-founded."

Foley, who earned his doctorate in Computer Information and Control Engineering from the University of Michigan, first came to Georgia Tech in 1991 to build the Graphics, Visualization and Usability Center, which by 1996 was ranked No. 1 by *U.S. News and World Report*. In 1992, graduate students in the College of Computing named Foley "most likely to make students want to grow up to be professors."

In 1996, Foley became director of Mitsubishi Electrical Research Lab in Cambridge, Mass., rising in 1998 to chairman and CEO of Mitsubishi Electrical ITA. He returned to Georgia as executive director of Yamacraw, the state's economic-development initiative in broadband. Foley also chairs the Computing Research Association, an organization of more than 200 computer-science and computer-engineering groups.

— Karen Hill

Sphinx-Like **Mystery**

Alfred Merrill studies biological compounds that are potential killers

It's not a phrase as famous as "Indiana Jones and the Temple of Doom," but "Alfred Merrill and the Sphinx-like Lipids" does have a certain cachet, especially since solving the mystery of the biological compounds has led the Georgia Tech professor to the heights of Central American mountain villages in search of a potential killer of children and adults.

Merrill, who holds the Charles A. Smithgall Jr. Institute Chair in Molecular Cell Biology, studies a family of compounds called "sphingolipids." The name was given to them in 1884 for their enigmatic (sphinx-like) properties.

In the late 1980s, Merrill's laboratory helped establish that sphingolipids act as intracellular "signals" that regulate cell behavior, including life and death.

A few years later, Elaine Wang, a researcher in Merrill's laboratory, showed how disrupting these sphingolipid signals results in disease. Earlier, Ron Riley of the U.S. Department of Agriculture, had noticed that fumonisins — mycotoxins produced by a toxic and carcinogenic fungus on corn — were similar chemically to sphingolipids and wondered if they might mimic the role of sphingolipids in cells. The answer was yes. Wang showed that cells exposed to fumonisins continue to make the death-producing sphingolipids, but can't get rid of them, leading to widespread tissue damage.

Fast-forward to June 2001. Merrill and Riley, joined by Victoria Stevens of Emory University, find themselves in Guatemala, trying to learn exactly how fungus-infected corn affects humans, possibly as causes of birth defects.

Guatemala was chosen because there, corn is ground into masa flour and baked, sometimes providing up to 70 percent of the human diet.

Stevens was added to the team because she had shown that fumonisins, through disrupting sphingolipid metabolism, also interfere with folic acid utilization. Deficiencies in folic

acid can lead to neural-tube defects. Working with Olga Torres, a scientist at the Instituto de Nutrición de Centroamérica y Panamá, they found that not only are fumonisins significant contaminants of tortillas consumed in highland villages, but there also appears to be an incidence of neural-

tube-related birth defects as high as one in every 100 births.

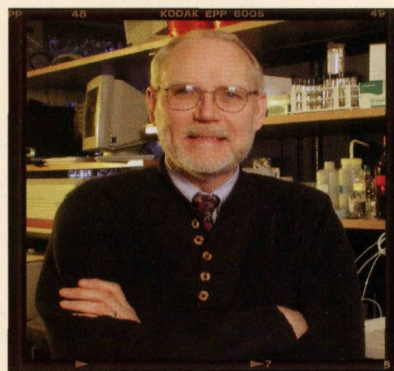
"If verified, that would be the highest incidence in the world," Merrill says. In comparison, the rate of neural-tube defects in live births in the United States is six per 10,000.

Now, the team is using a biomarker that can tell when humans have been exposed to fumonisins to start a much more rigorous survey of the role of fumonisins in neural-tube defects and other health problems in Guatemala.

"We're trying to move pretty quickly along," Merrill says, with the team galvanized by the prospect that their research could help reduce the high incidence of birth defects. "We will also be looking at more chronic disease that might also be caused by fumonisins because these mycotoxins also affect the liver, kidney, brain, lung and immune system.

"This work may resolve some of the remaining enigmas about sphingolipids and health."

— Karen Hill



ALFRED MERRILL

Chair in Molecular Cell Biology

August 2, 2001
Vacation in Scotland
The past year was one with a
pace. We entered the first half of our
construction effort. On
the original design
on the



An Engineer's Journey

Wayne Clough's journal records not only the spectacular scenery, but also a fascination with the brilliant engineering feats of the Scottish Waterways



Ed Milam

Journey Across **Scotland**



The Waterways of the Scottish Glens, a tour exploring the highland lochs, glens and ancient castles, held a special appeal to Georgia Tech President Wayne Clough — it featured an eight-day cruise navigating Scotland's Caledonian Canal and its historic system of locks.

Clough, CE 64, MS CE 65, worked for the U.S. Army Corps of Engineers after graduating from Tech and helped design modern navigational locks in the United States.

He left the Corps to earn his doctorate at the University of California at Berkeley, where he helped

develop a new computer-based simulation technique for soil structure interaction that applied to two new types of high-lift locks in Louisiana. The program was later adopted by many design firms and the Corps of Engineers and used in the design of locks and

other ground supported structures throughout the world. A paper written on the work won a national prize.

"Because of my past work, I was especially interested in the historic structures in Scotland," Clough says. "In the 1800s, Scotland was the world's leading nation in engineering; its engineers designed stunning new large iron bridges and developed the first extensive rail systems, steam engines and large steam-driven ocean-going ships, as well as a network of locks for internal commerce and transport."

Although seeing the 150-year-old system of locks designed by engineering pioneer Thomas Telford held a special fascination, Clough also was intrigued by the ship, *Lord of the Glens*, which sailed the Caledonian Canal.

"The *Lord of the Glens* was designed specifically to be as large as possible and still fit within the smallest of the Scottish locks. It did so, barely, and required considerable expertise by the captain," Clough says. Measuring 150 feet in length with a 35-foot beam, the ship was so large, "people from the surrounding towns came to see it go through."

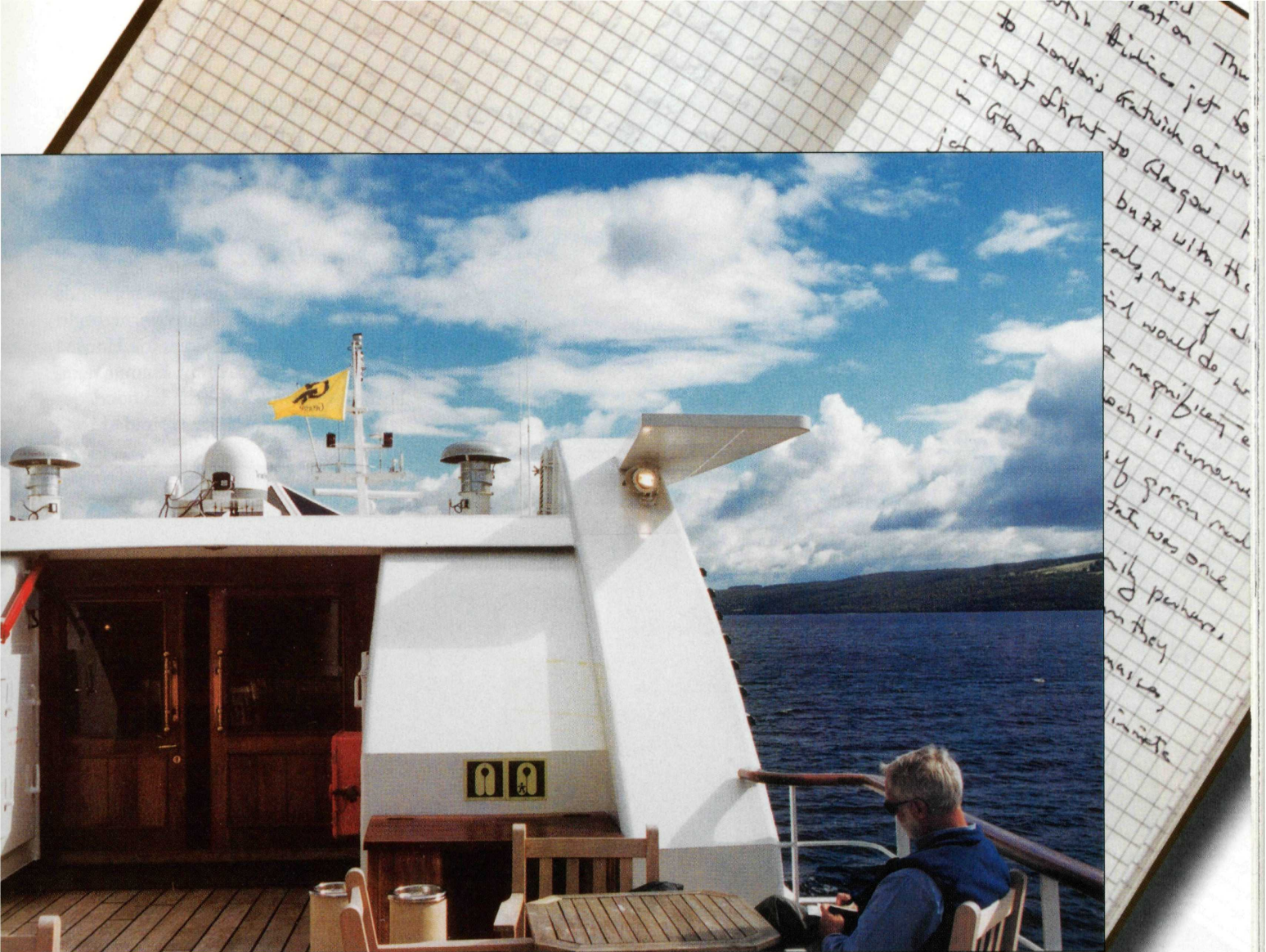
Wayne and Anne Clough hosted the tour, sponsored by the Georgia Tech Alumni and Athletic Associations, last August. Other Tech alumni taking the tour were Ron and Dot Jane Yeakle of Pensacola, Fla.; Ed and Ruth Milam and Tom and Joan Murphy, all of Atlanta; and Sam and Helen Matthews of Catonsville, Md.

Clough kept a daily journal of the trip, and Ed Milam, Arch 67, and Joan Murphy took photographs of the journey. Excerpts from Wayne Clough's journal appear on the following pages.



Ed Milam

The Tech group tours Armadale Castle and Garden Ruins on the Isle of Skye.



Ed Milam



Displaying the Georgia Tech banner on board the Lord of the Glens are (l-r) Tom and Joan Murphy, Ron Yeakle, Ed and Ruth Milam, Anne and Wayne Clough, Dot Jane Yeakle and Sam and Helen Matthews. AT TOP: Tech's President Clough adds the day's entry to his journal.



stop at a
climb into the
to the town of Oban.
cool, ascend 60 degrees, with on a
again, shows that Jock in on a bridge
veil front and pass thru by dying out
in scattered clumps. Jam, on guide, calls
the more vigorous of these "thunder plunks"
although thunder is rare.
The mountains are spottily wooded
with trees dropping off entirely above
about 2000 ft elevation. We learn later
tells by a nature writer, Jam
if man has drastically
Scotland basically
of Scotch Pine
the land.

Day 1

An overnight flight to London followed by short flight to

Glasgow. Arriving at noon in

Glasgow, we buzz with the requisite jet lag in our heads, most

of all hoping for a bed. While any kind of bed will do, we arrive at Cameron House, a magnificent estate.

Day 2

Exploration of the highlands begins with an overnight stay in the Cameron House on the "bonny, bonny banks" of Loch Lomond. The loch is surrounded by

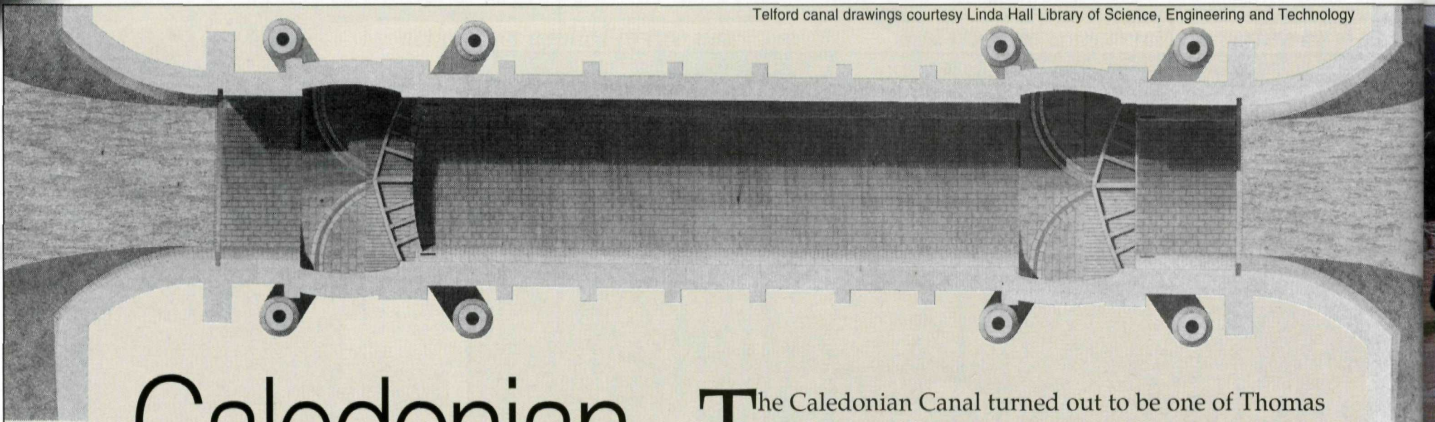


Joan Murphy

Duart Castle on the Isle of Mull. Today's housing on the isle, as evidenced in Tobermory (right), is smaller and more colorful.



Telford canal drawings courtesy Linda Hall Library of Science, Engineering and Technology



Caledonian Canal

The ancient waterway still stands as a tribute to Scotland's 'Colossus of Roads'

By Gary Goettling

The Caledonian Canal turned out to be one of Thomas Telford's enduring legacies, but until the end of his long and productive life, the massive project was a bitter disappointment to the renowned Scottish civil engineer. Construction of a navigable waterway across Scotland's Great Glen had long been regarded as a work of national importance when the first survey was finally conducted in 1771.

James Watt, later famed as the inventor of the steam engine, but then employed as a surveyor, was hired to scout the glen and ascertain the practicability of building a canal. His report suggested constructing a 10-foot-deep waterway through the difficult landscape.

rolling hills of various hues of green made lush by ample rainfall.

Anne and I walk the grounds after having tea and crumpets. The air smells fine and the setting sun provides a delicately filtered light that shapes the landscape with contrasts of open and shaded areas separated by shadows. Showers arrive without

notice and disappear as quickly.

Day 3

Travel north along Loch Lomond to Inveraray, whose name poetically slips off the tongue, for a glimpse of life behind bars during Victorian times. Visit includes the old town's 19th-century prison, courtrooms and jail cells. We arrive in Oban and board the ship, the Lord of the Glens. Recently outfitted, it has a sleek hull and the teak and

brass interiors provide an elegant setting.

Day 4

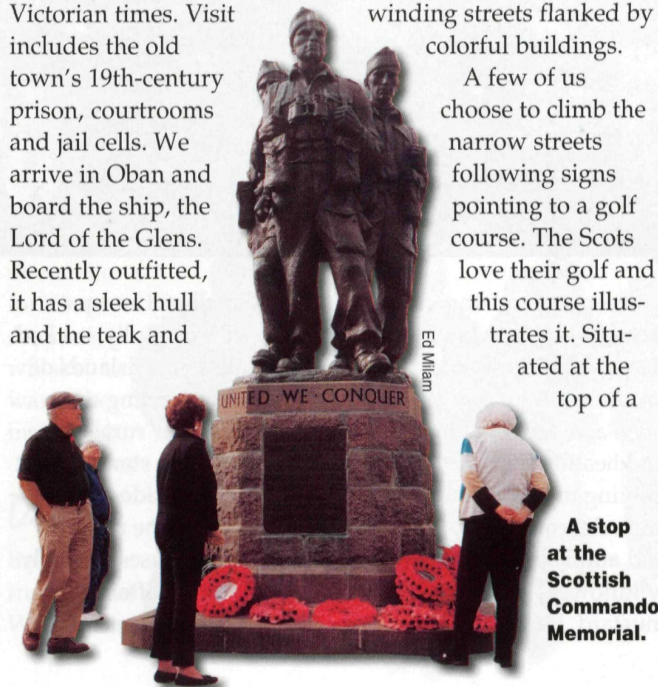
Sail the Firth of Lorn to the northern tip of the Isle of Mull. Dock in the harbor town of Tobermory in the afternoon. The town has winding streets flanked by colorful buildings.

A few of us choose to climb the narrow streets following signs pointing to a golf course. The Scots love their golf and this course illustrates it. Situated at the top of a

bluff above Tobermory, it is carved out of small acreage to create a nine-hole layout. Ingeniously developed, it takes maximum advantage of the land, with the holes crossing at points and having blind approaches. Golfers on one hole, having to cross an adjacent fairway to tee off, gamely wave the next group to shoot over them.

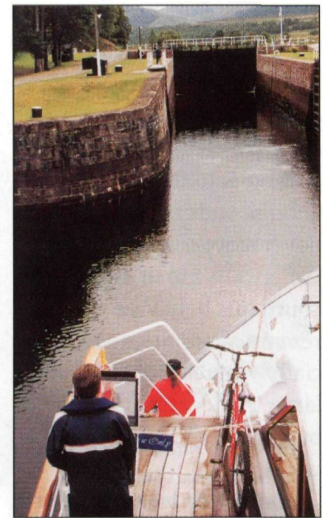


Joan Murphy



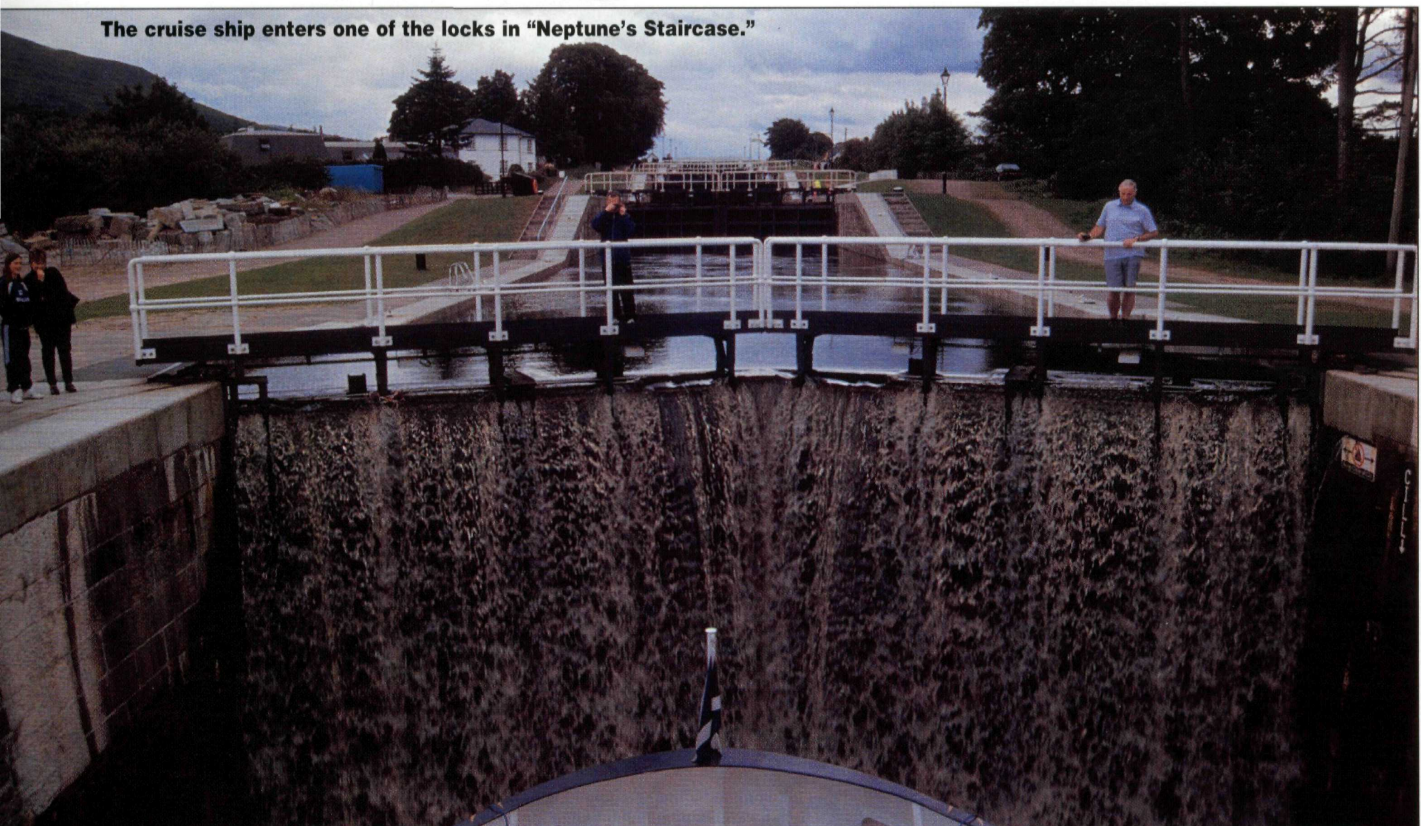
Ed Milam

A stop at the Scottish Commando Memorial.



Ed Milam

The cruise ship enters one of the locks in "Neptune's Staircase."

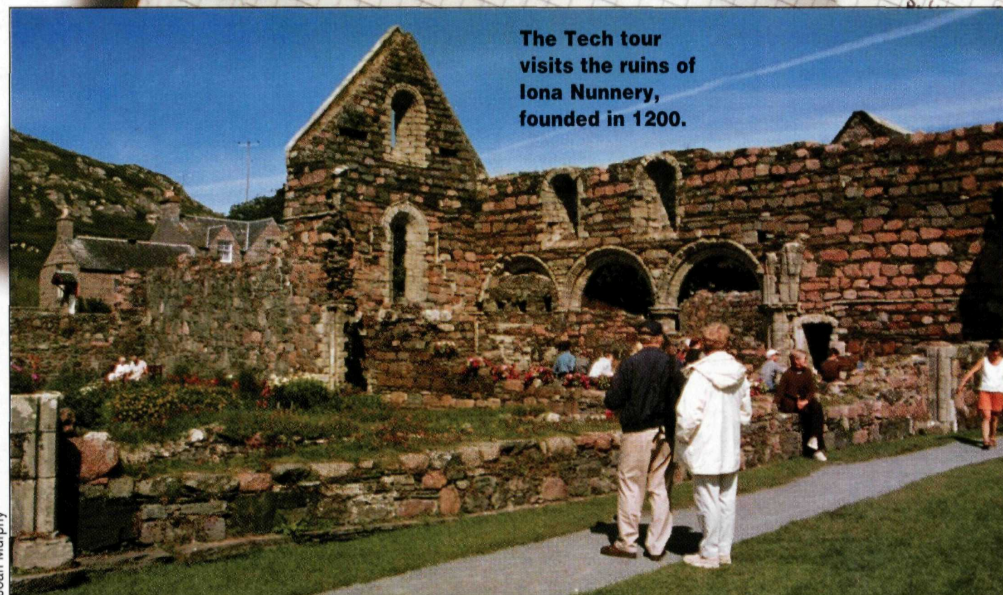


Ed Milam

Day 5

This day dawns clear as we prepare for an overland journey by bus across the Isle of Mull down to the small island of Iona. The roads are essentially one-lane wide, but serve two-way traffic. To avoid collisions, the Scots add turn-outs — small bulges in the road — about every 10th of a mile on alternating sides. The Scots have perfected this tricky head-on traffic pattern and nine times out of 10, one of the drivers anticipates his or her role and pulls to the side early enough so the other driver never slows down. The Americans are in awe of this courteous behavior and remain a tad nervous, especially when other buses or large trucks approach our bus and execute this maneuver.

Our route takes us across



The Tech tour visits the ruins of Iona Nunnery, founded in 1200.

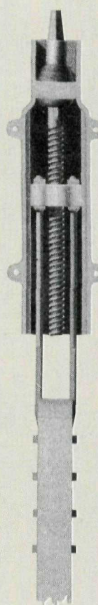
Joan Murphy

a sweeping landscape. Anne, who is a master gardener, points out fields of bracken — a kind of fern; open acres covered by grass and heather, only now beginning to bloom and showing a delicate light purple; and ample offerings of wildflowers — foxgloves, mustard, bluebells and

more. Small picturesque farms with carefully stacked rock walls create islands of tranquility standing out from the wilder rural setting. Structures standing out on the countryside are either castles or the ruins of small stone houses formerly belonging to crofters, who were basically farmers

pushed off the land in the 1800s by a system called "The Clearances."

Cross by ferry to the Isle of Iona, the cradle of Scottish Christianity and ancient burial site of the kings of Scotland. Founded by the Irish saint Columba in 563, Iona's Benedictine abbey



Cutting diagonally across the northwest corner of the Scottish island to connect the Atlantic with the North Sea, a canal would permit ships to avoid the treacherous waters and capricious winds off the north Scotland coast and reduce travel time from weeks to a few days.

Further interest in the canal languished until 1801, when one of the periodic conflicts between Great Britain and France revived the virtue of a conveyance enabling British shipping to pass from one part of the kingdom to another without being exposed to the attacks of French privateers.

Prodded by business, the royal government authorized another canal-feasibility survey of the Great Glen along with site selection for fishing stations along the west coast of Scotland, and planning for road and bridge communications on and between the Scottish mainland and surrounding islands.

The enormous task was awarded to Telford, a self-educated 44-year-old civil engineer whose reputation was at a peak, with numerous roads, bridges, harbors and other infrastructure to his credit.



Telford became known for his pioneering development of iron in bridge building and other infrastructure projects. Cast iron opened up a universe of possibilities. It was much lighter than stone but nearly as durable; the metal could be molded into precise forms and fitted with such accuracy as to impart the greatest possible rigidity.

Telford was determined to overcome problems associated with iron casting and create designs to take advantage

...This allows a vehicle
to allow another to pass. Starts
tricky head-on traffic
out of the way of the
water hole on the other
side so the other
can time to time of
arrives with hopefully
to back to the
is a remarkably

has been restored. On the way back, we visit Curant Castle, built by the Clan Maclean in the 1300s, and now restored after being destroyed in clan warfare.

Day 6

Cruise through Loch Linnhe to transit Banavie Locks. Nicknamed "Neptune's Staircase," Banavie Locks

gradually raise the Lord of the Glens up into Loch Lochy through a series of eight locks. Built in the 1800s, the locks are a marvel of engineering. At the top is Fort William, a town nestled at the foot of the Nevis mountain range. A gondola goes up Aonach Mor, a mountain adjacent to Ben Nevis, Scotland's highest mountain. We ride the gondola up to 2,600 feet then hike up to 3,000 feet, where the winds howl and rain blows sideways. A stop on the way down allows for a wee dram of whiskey to warm the insides up.

Day 7

Board a train at Fort William for

a scenic journey westward to Mallaig. Traveling the Iron Road to the Isles, crossing a dramatic region of bog, mountain and moorland cleaved by sea lochs and fringed by sand beaches. In the distance, the Isle of Skye can be seen with its west side dominated by rugged sawtooth mountains. The ancestral home of the Clan Donald is on Skye, an abandoned castle that is being restored. Its gardens are the most spectacular we

have seen.

The bus ride back takes us across the Isle of Skye and into a magical landscape of mountains, waterfalls and lochs. Broad-shouldered mountains rise impressively from the lochs, at first gently and then lifting sharply to their crests.

Eilean Donan castle is seen from a distance as in a dream. It is the incarnation of all the faraway kingdoms imagined in children's fairy tales or legends of knights of yore. Standing lonely sentinel on a promontory of rock it reaches out to Loch Duich. No wonder it is Scotland's most photographed castle.



Accompanied by their tour guides (kneeling in front) atop windy and cold Aonach Mor are (l-r) Sam Matthews, Joan and Tom Murphy, Ruth and Ed Milam and President Clough.

of iron's potential. His first big chance came in 1793, when he paired with renowned English engineer William Jessop to design and build the Ellesmere Canal. The 112-mile-long canal joined the Mersey, Dee and Severn rivers.

One of Telford's innovations at Ellesmere — which would reappear later in his work on the Caledonian Canal — was adopting cast iron for the lock gates. Besides being more durable than wood, iron would not shrink and expand through alternating periods of wetness and dryness.

In addition, some locks had to be situated over unstable sand, a problem Telford solved by constructing the entire lock with iron.

For bridge crossings over the canal, instead of the drawbridges typical of the time, Telford designed iron bridges that swung open horizontally.

In 1801, when the British government needed someone to survey a site for the Caledonian Canal along with other infrastructure improvements for the Scottish Highlands, officials sought Telford.

His analysis of the Great Glen canal site was favorable, and followed in many particulars the survey executed by Watt some 30 years earlier.

The chief advantage of the line drawn by Telford was that it ran through four navigable, freshwater lochs —

Lochy, Oich, Ness and Dochfour. Incorporated into the canal, the lochs would constitute about two-thirds of the 60-mile passage, necessitating but 22 miles of canal construction. The lakes would also double as the water sources for filling the locks, with water levels controlled by weirs and sluices.

The disadvantage — and there was no way around it — was that the mountainous countryside would be exceptionally difficult to work in.

As envisioned by Telford, the dimensions of the artificial waterway were unusually large because the intention was to accommodate a fully laden, 32-gun frigate. The canal would measure 110 feet wide at the surface and 50 feet at the bottom, to a depth of 20 feet. The locks were similarly spacious, each being 170 to 180 feet in length, 40 feet wide and 20 feet deep. The final dimensions were modified somewhat during the course of construction.

Work began in the summer of 1804 with construction of a basin at the southern end of the canal route and a tidal sea lock at the entrance with two locks descending to the basin. From there the canal was excavated to Loch Lochy, a distance that climbs about 90 feet in eight miles.

To accommodate the steepest part of the incline, Telford designed what he called "Neptune's Staircase" — a series

Photos: Ed Milam

Day 8

Cruise down the Caledonian Canal, pass the Moy Swing Bridge into Loch Lochy on a journey to Fort Augustus at the south end of Loch Ness.

We are treated to the Highland Games. There are dancers and music performed in the Highland way by folks from all over Scotland, and even a few from the United States. Since the games involve throwing really big objects around, the competitors look as if they could block and tackle for the Chicago Bears.

Day 9

We sail on the magnificent waters of Loch Ness, deep as an ocean but sheltered by gently sloping banks on either side. Many acres are occupied by picturesque farms framed on either side by green pastures and feed-



ing flocks of sheep. The sunlight plays on the land, changing at the whim of the drifting shadows of the low-lying clouds. This interplay of nature's creations seems provided for the joy of the human mind, showing the gentlest side of the Creator. The ship stops at the site of Urquhart Castle, a plundered medieval fortress on a promontory overlooking Loch Ness, and a favored spot for sighting the legendary monster.

We cruise slowly up the

Caledonian Canal, and today we can't contain the pride we all have for the Institute. We fly a Georgia Tech banner atop the ship's mast for all to see.

We have had a great day, but Nessie was only in evidence in our more imaginative moments in swirls on the water of the great loch.

Day 10

Disembark the Lord of the Glens in Inverness and travel overland to Edinburgh. We are treated to remarkable vistas of mountains shrouded in fog and misty showers with lowlands covered in heather. We stop to visit a famous Scotch whiskey distillery. After a tour of the distillery process, we are treated to a tasting of what the guide calls "a few wee drams." After a dram or two, the Tech crowd gathers around

the bar and spontaneously sings the Ramblin' Wreck. Our fellow tourists look on in amazement and envy — so much so that a few join in when they can — especially the part about "drinking my whiskey clear."

Day 11

A day in the Scottish capital, a tour of Edinburgh Castle, where Mary, Queen of Scots, gave birth to James IV of Scotland, later to become James I of England. At one point there are more than 200 pipers on the court of historic Edinburgh Castle, and it is a stirring score. The concert ends with a lone piper playing on the castle battlement. It is a moving end to our stay in Scotland and Anne and I have had a wonderful time and have fully enjoyed our fellow Tech alumni who helped make the visit special.

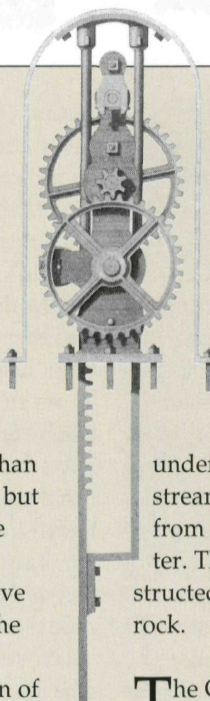
of eight locks clustered together so that the top gates of one lock form the lower gates of the next chamber. The locks elevate the canal 63 feet over 500 yards, and are set in a quarter mile of continuous masonry.

Before mechanization in the 1960s, poles were inserted in the lockside capstans and turned by hand to open and close the gates. Each trip up or down the staircase meant turning the capstans 126 times.

The staircase approach may have seemed like a good idea at the time, for it was more economical than building stand-alone locks with basins in between, but the concept would later prove to slow passage time considerably and waste water.

Two smaller sets of staircase locks of four and five chambers each were included in other sections of the Caledonian Canal master plan. A total of 28 locks would allow ships to climb to the topmost elevation of the canal, Loch Oich, situated 106 feet above sea level.

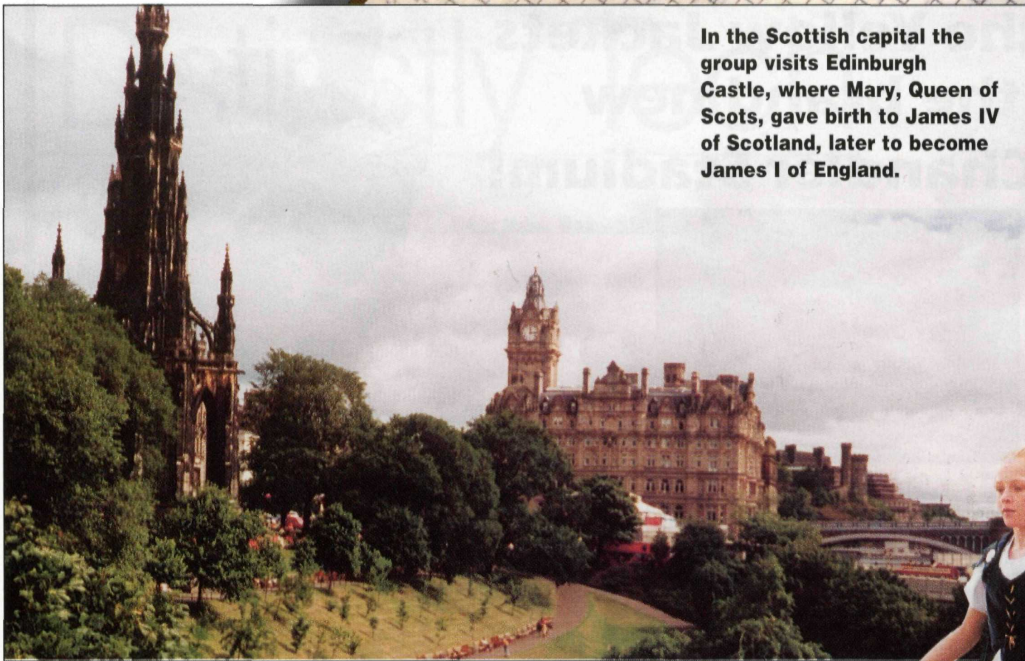
Lock gates were constructed of iron sheathed with pine planking. They were replaced with stainless steel in the 1970s. Eight road bridges, also made of iron, crossed the canal, and swung open horizontally to allow ships to pass.



At the same time work started at the Atlantic Ocean entrance to the canal, excavation and embankments were under way at the other extremity to build, in effect, a 32-acre artificial harbor. The entrance lock to this harbor was constructed far out into deep water on piles, at the end of huge embankments. Pilings were driven into the soft mud by stacking great stone weights on top of them and allowing them a year to settle into place.

The finished canal includes four aqueducts, along with numerous culverts, tunnels and underbridges to accommodate numerous mountain streams. Powerful sluices divert excess water sent down from the adjacent mountains into the canal during winter. Three of these, high above the river Lochy, are constructed at a point where the canal is cut through the solid rock.

The Caledonian Canal was the first state-funded public transportation project in Great Britain's history. Its place in history was also secured by the sheer complexity of engineering and enormity of the effort — 3,200 workers performed all the work by hand using picks, shovels, wheelbarrows and brute strength.



In the Scottish capital the group visits Edinburgh Castle, where Mary, Queen of Scots, gave birth to James IV of Scotland, later to become James I of England.

Day 12

Anne and I leave our group on the final day for a special visit to St. Andrews, an ancient town famous for its golf course and university. We are on a mission to complete arrangements for

a new fellowship program in honor of the great golfer and Tech alumnus, Bobby Jones, that will allow each year for a St. Andrews graduate student to study at Georgia Tech, and a Georgia Tech graduate student to study at St. Andrews.

Stephen Magee of St. Andrews University and his wife provide us with a tour of the university founded in 1412. Both universities look forward to a growing relationship.



Yet for all its high expectations, the canal was beset with problems. When the first ship passed through the Caledonian Canal in 1822, the project was 11 years behind schedule and a half-million pounds sterling over budget, owing in great part to difficulties working the terrain by hand. In fact, growing criticism forced the opening of the canal before it was finished. As a result, constant repair became a troublesome feature of its operation — so much so the canal was closed during 1843-47 for improvement and completion that included addition of another lock.

To make matters worse, the canal was a financial and commercial disaster. It never attracted the volume of traffic — and thus the toll revenue — its promoters expected. The rise of self-propelled steamships neutralized problems navigating the Scottish sea, and a new generation of cargo ships was too large for the canal. Only relatively recently has the canal found its long-deferred popularity: tourists marveling at the Scottish landscape.

Telford, who suffered few setbacks in his career, was devastated by the canal's commercial failure. The Caledonian Canal, however, was only part of Telford's larger plan to develop the North Scotland infrastructure, and in this his success was unqualified.

During the same 18-year period the canal was under construction, 920 miles of capital roads connected by 1,200 bridges were completed according to Telford's plan. Reflecting on the achievement, a friend dubbed Telford the "Colossus of Roads."

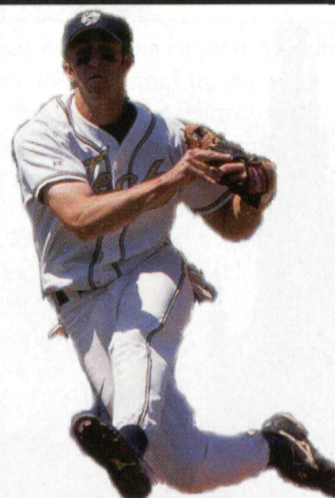
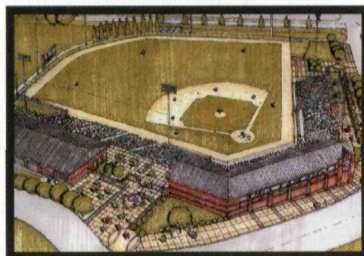
During his later years, Telford took an interest in establishing a professional association for civil engineers. When the Institute of Civil Engineering was formed, Telford was offered the position as its first president, which he held until his death in 1834 at the age of 77.

Telford's contributions are measured by hundreds of bridges, thousands of miles of road, and dozens of harbors, canals and utility works planned and built under his careful guidance, primarily in Britain, but other parts of Europe as well. But perhaps his greatest influence was the development of modern civil engineering itself. Telford's energy and creativity infused the profession with an attitude succinctly expressed in one of his many letters, written near the end of his life.

"We do not consider anything to be impossible," Telford wrote. "Impossibilities exist chiefly in the prejudices of mankind, to which some are slaves, and from which few are able to emancipate themselves and enter on the path of truth." **GT**

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Jan. 2	Cornell	Feb. 2	North Carolina
Jan. 5	Clemson	Feb. 9	Duke
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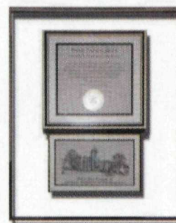
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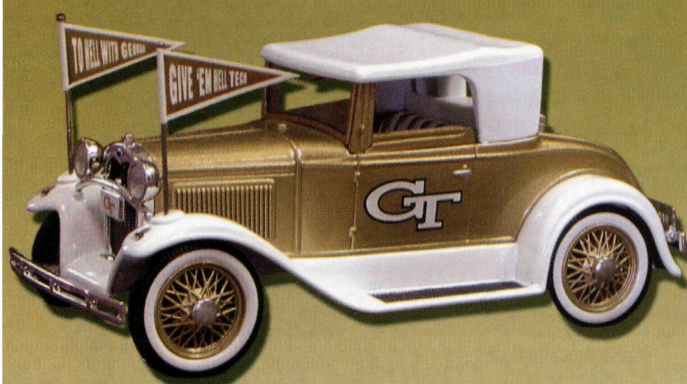
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Function First

Tavel named Georgia's Young Architect of the Year

By John Dunn

Jose Tavel had his share of late nights in the College of Architecture at Georgia Tech, but he still managed to have fun while producing award-winning work. As a student, Tavel won several important awards, including a SGF Award for his design of a home and cemetery for aging "rock stars." The inspiration for his thesis was the late Rev. Howard Finster, the Rome, Ga., folk artist.

"I'm having a great time," says Tavel, Arch 84, M Arch 87, whose interior designs continue to win awards. In October, he was named Young Architect of the Year by the Georgia chapter of the American Institute of Architects. Formerly with Stang & Newdon, he started his own firm, TAC Studios, in November.

A native of Cuba, Tavel and his family came to America in 1967, when Cuba allowed its citizens to take freedom flights out of the country. The purpose was to get dissenters out

of Cuba to diffuse any counterrevolution, Tavel says.

"It was held in the way of a lottery," Tavel explains. "You signed up and when your number came up, they would come knock on your house and pretty much seal it. They'd give you a few minutes to get a change of clothing and a bag, and from there on you gave up everything you had."

Tavel's father had been an accountant for the Coca-Cola Co., and he resumed working for the firm in Atlanta.

Tavel was introduced to architecture in the third grade, literally by accident. One of his good friends was

Ray Stainback Jr., whose father was a founder of Thompson, Ventulett, Stainback & Associates. The Stainbacks had a trampoline, and Tavel says his mother warned him several times, "Don't get on that trampoline, you're going to break your leg." Tavel ignored her and broke his ankle.

Because he was involved in a school project with Stainback, Tavel spent a great deal of time at the Stainbacks' home and became fascinated with drawings and models. Tavel decided right then to become an architect.

At Tech, Tavel says the work of Le Corbusier, Frank Lloyd Wright and Charles Rennie "appealed to me because of their thoroughness of design.



It is a strong belief I have today that design never ends — there is always a next tier of design to be addressed."

The work of Finster, he says, "influenced me to re-evaluate the many materials available for construction — conventional or not."

Tavel was doing an independent class mapping out Finster's garden, and going nowhere on his expanding thesis. Tavel says his adviser, Assistant Professor Robert Segrest Jr., observed, "You're having a much better time mapping out this garden than you are working on your thesis."

Tavel says he was able to turn the garden project into a thesis.

"I basically threw away a quarter and a half worth of research that was only getting broader. I cranked out my thesis in a couple of weeks." The thesis compared Finster's folk-art garden with the works of Italian architect

Tavel's projects are "like having children. They all have their high points and their low points. And you go through a birthing process with every one of them."

Piranesi, who studied the reconstruction of Rome in the 1500s. "It had some very interesting parallels."

Tavel's Atlanta Urban Design Awards include his work on Iconologic Design Studios, Urban Coffee Bungalow, William-Oliver Lofts, Nickimoto's and Food Studio/Bold American Food Co.

"I enjoy dealing with the sculpting of space and the manipulation of materials and light to create a provocation of emotions and experience," Tavel says. "I want the user to have a sense of wonder and exploration as the different juxtapositions of vol-

umes and textures reveal themselves. I want real materials and textures at locations where people come in contact with the architecture. I want the experience to be sensual in that the senses of sight, sound and touch are all evoked."

Tavel says he has no favorites among his design projects.

"It's kind of like having children," says Tavel, who has three sons.

"They all have their high points and their low points. And you certainly go through a birthing process with every one of them."

In approaching a project, Tavel says he first determines what the client really wants done. "I really try to understand what their needs are and address it from a very functional approach. When I know that a project will function as they want it to, then we get into the aesthetics and the fun part. But function comes first." **GT**

Referee Turns CEO

Tony Means keeps first African-American pharmaceutical firm on pace

By Anne Melfi

In the fast-paced game of basketball, Tony Means makes the calls as a referee. In the business world, where he is founder of the first and only African-American pharmaceutical company in the United States, he calls the shots — period.

"We move fast," says Means, IM 82, president and chief executive officer of Imiren Pharmaceutical in Decatur, Ga. "We can provide promotional programs and packaging somewhat faster than the competition — in three months, while major corporations like Johnson & Johnson take six to eight months."

It has been a good year, Means says of the business he founded in 1998 after a 15-year career in pharmaceutical sales. He projects annual fiscal sales at \$12 million to \$15 million. His company has eight employees and he plans to add more.

In October, the company won an exclusive five-year contract with Veterans Affairs and the U.S. Department of Defense to supply the angina medication Isosrbide to

all of their installations worldwide, Means says.

Imiren also makes Doxycyclene, a drug used to treat anthrax, and has recently supplied a significant amount to the U.S. government and the private sector.

Means has been making the right moves since his student days at Georgia Tech when he was refereeing high school basketball games. When Bobby Cremins came aboard as Tech's head basketball coach in 1981, Means was named manager of the Yellow Jackets and traveled with the team.

"I've been refereeing basketball now for 22 years, longer than I've been in the pharmaceuticals business," Means says. "But my passion is pharmaceuticals. I know more about that than anything."

Means spoke from a mountaintop in Bitberg, Germany, one stop on his tour as referee for the U.S. Armed Forces Basketball Championships, held in November on U.S. Air Force and Army bases around Germany. The Department of Defense drafted Means for the job when he was refereeing at the National Collegiate Athletic Association basketball tournament in 2000, where he refereed at the NCAA

Mid-Eastern Athletic Conference. From Germany, Means phoned his company every few hours to make sure things were rolling smoothly.

When he graduated from Tech, Means took a job doing package design for Hoechst Fibers Inc.

"The sales team seemed to have so much fun," Means says. "I wanted to get out and meet people too. I went to work for Burroughs Wellcom and planned to stay for six months to get some sales experience."

He was hooked.

After 15 years in sales, he dreamed of having his own generic pharmaceuticals company. He saw a trend that made it irresistible.

"So many good drugs were coming off patent," Means says.



Caroline Joe

"In 1998 I took my dream off the notepad and made it a reality."

Means convinced the Kroger Co. to stock Ibuprofen, Imiren's generic equivalent of Advil, which is now on the shelves of all Kroger stores across the United States. Publix Super Markets has just accepted Imiren's Ibuprofen as well as Acetaminophen, which is comparable to Tylenol, Means says. Imiren is now in serious discussions with Kmart and Wal-Mart.

Means says he did not set out to create the first African-American pharmaceutical company, although he made that discovery when researching the Small Business Association database. He waived SBA minority certification, though Imiren's unique profile opens doors into companies with minority supplier programs.

Making quality pharmaceutical products available and affordable is central to Imiren's mission, a force that could drive escalating drug prices down, he says.

Means was with a major company in the industry when the U.S. Food and Drug Administration first allowed patent drug ads on television, spawning a flurry of commercials that have been blamed for elevating demand and inflating the price of pharmaceuticals.

"I think it's unfortunate that there's a perception that the price of pharmaceuticals is what's driving up the price of health care," Means says. "It's the high cost of research — \$200 million or more to get a drug to market — which drives the pricing. Everyone is trying to recoup their investment before the patent runs out."

Means is passionate about medicine. No ordinary salesman, he has worked in cardiology, critical care, intensive care and burn units, introducing doctors to the newest products. He even has been invited to observe surgery. He was with the Burroughs Wellcom Co. (which has since blended with GlaxoSmithKline) when Zovirex was launched, and he's written contracts for major hospitals.

"I've done everything but make the pills — but I've seen that done," Means says. "It's been rewarding to work with the doctors in the medical schools, teaching them ways to help their patients and really make a difference. We had a product called Exosurf at Burroughs Wellcom that

helps premature babies breathe and survive. It's really rewarding to see a baby who can fit in the palm of your hand live and grow up to be a healthy child. I feel that I was blessed to get into this as a career." **GT**



Tapestry of Life

Lynn Nickerson weaves technology, art into a satisfying career

By Maria M. Lameiras

When she was the newly divorced mother of a young child, Lynn Battle Nickerson knew she needed to do something to help support herself and her son. She turned her hobby into a livelihood.

A former banking executive, Nickerson didn't want to return to corporate life after her divorce in 1985, so she decided to explore the technical side of her favorite hobby — weaving.

"My mother was very creative. We did needlework together and I did the typical macramé thing. When I picked up weaving, it was so natural to me that I was just immediately hooked," says Nickerson, TE 91. "The thing I liked about weaving is that it is not only creative but also very technical. There is a lot of technique in it, a lot of mathematics. There were two ways to be in textiles, I thought — the art route or the industry route. I was used to a regular check and couldn't quite think of myself as an artist. I could think of myself in business, so I decided to go into the industry."

A Duke University graduate with degrees in English and psychology, she applied to Georgia Tech's textile school. Because of her lack of a science background, she took math and science classes before entering Tech.

"I spent a year at Georgia State then switched to Tech, where I majored in textile chemistry. I wasn't good at chemistry, but I was very good at physics," says Nickerson.

She laughs as she relates her love of her physics classes. "My husband [David Kerry Nickerson, CE 82, whom she married in 1990] thinks I'm a maniac, but I would sit through lectures and laugh with joy because I was so interested in what I was learning."

Although being a "nontraditional" part-time student at Tech while rais-

ing a child was demanding, Nickerson says her fellow students were a boon when it came to classes that were more difficult for her.

"It had been a long time since I'd had trigonometry or algebra or calculus. I gained a great deal of respect for Georgia Tech and Tech students when I would go into a class and, invariably, one of the really good students would befriend me. Wherever I had gaps in knowledge, they would fill me in and answer all my questions," she says.

Nickerson switched to textile engineering and earned her degree in 1991 but found her degree didn't guarantee instant access into the textile industry. Textile jobs were scarce.

"I had one interview, and it was a fiasco. I showed up, and they didn't have me on the list. I had been in business — I knew what I was doing and I barely got an interview," she says.

Her next step was one she wouldn't have taken before attending Tech.

"Tech took high school kids and turned them into confident young people ready to take on anything," Nickerson says. "By the time I graduated, I knew I didn't have to have a job in the industry to make it. I had gained that confidence too. I set up my own company to do custom yardages."

Nickerson finds herself in a world between friends who are artistic weavers and engineering colleagues in the textiles industry.

"When weavers ask me about my degree, I tell them it was mostly mechanical engineering classes plus a lot of chemistry. They are surprised because they expect it all to be about structure," she says.

The combination of the structure of a textile and the fiber of which it is made determines its tensile strength and reactivity to outside elements such as cleaning solutions and dyes,

as well as its ultimate use and look.

Nickerson says a fundamental understanding of structure came to her as she learned the engineering and problem-solving side of textiles.

"Something happened to me in my years at Tech. I suddenly understood all structure. If you show me what you want in a textile, I can make that happen. Something in my training made me capable of doing that — that problem solving," she says.

In addition to starting her own company and being a full-time mother to her son and her husband's two children from a previous marriage, Nickerson has worked on business projects ranging from helping develop a textile to shield American military personnel from enemy detection systems to reproducing the historic textiles of a traditional Finnish costume. She specializes in developing custom textiles for various uses and weaving limited-run yardages.

On the artistic side, Nickerson creates custom "wearable art" scarves and other pieces on the large computerized loom in the sunny studio of her Buckhead home. The pieces have been featured in art gallery shows.

Her pieces require a knowledge of weaving and an intellectual and practical knowledge of the properties of fibers and structure, as well as an understanding of dye technology.

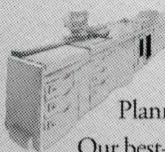
To produce her unique colors, "I choose dyes that will color only one of the fibers and only enough to alter the color, not mask it entirely. I am able to make them this way because of my knowledge of the fibers themselves," she says.

The unique world she inhabits between art and technology fits Nickerson's style the way her scarves drape naturally over her shoulders. "I have found this to be a very interesting life," she says. **GT**

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Custom Design

Atlanta firm transforms 100-year-old mill house to illustrate its unique style

By Maria M. Lameiras

Jan Lorenc wants the elements of his designs to capture attention while blending seamlessly with the surroundings. The same holds true for Lorenc+Yoo Design, the firm he runs with partner Chung Yool Yoo, a company with less than a dozen employees.

Lorenc established the company in Chicago as Lorenc Design in 1978 while in graduate school after working for other companies for several years, during which time he designed the now-prolific logo for the Target chain. He moved the practice to Atlanta in 1981 to take advantage of the dynamic environment of the growing city.

Yoo, ID 87, MS 97, worked for the

firm from 1988 to 1992, when Lorenc decided to enroll at Georgia Tech to earn a master's degree in architecture.

"The economy had taken a downturn and I was bored with a singular focus on signage design, so I decided to go to Tech," says Lorenc, who holds a bachelor's degree in industrial design and a master's degree in visual design from the Illinois Institute of Technology, Institute of Design.

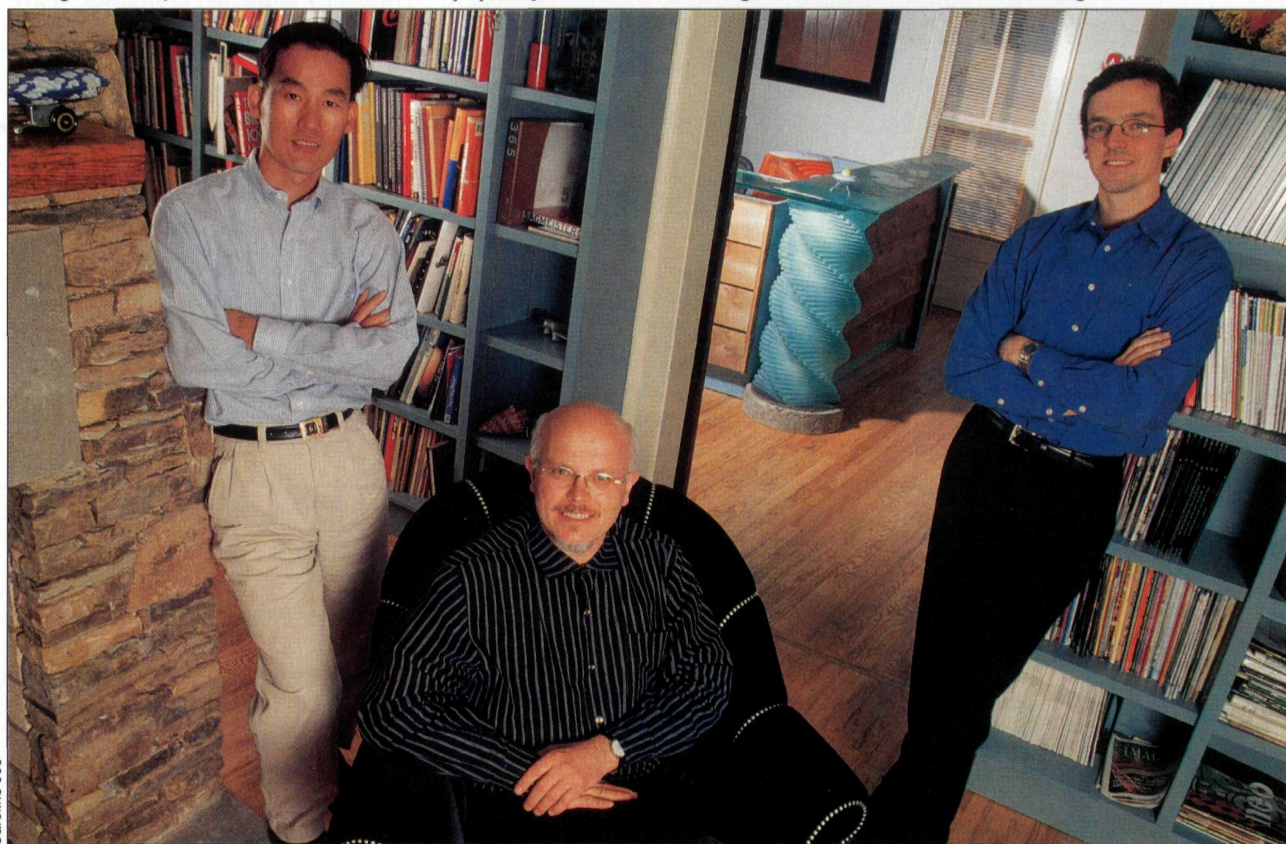
"When I started in the design business, I was rigid, doing things that only related to certain types of design. I wanted to grow and learn, I wanted to expand my own design horizons, so I entered into the architecture program. It was kind of a mid-course correction to figure out

what I wanted to do when I grew up."

A year after earning his master's from Tech in 1994, Lorenc asked Yoo to come back and take a partnership. Although they are from disparate backgrounds — Lorenc came to the United States from Poland with his parents at age 8 and Yoo emigrated from Korea at age 19 — the partners knew their styles were complementary.

"It was a good offer for me to take because I always wanted to be a partner in a firm of this caliber and we each knew exactly how the other worked. Jan is very creative in design and I have a very strong sense of developing a design and carrying it all the way through to make sure it ends up how we developed it. I take a lot

Chung Yool Yoo, Jan Lorenc and David Park (l-r) are part of the Tech design brain trust of Lorenc+Yoo Design.



Caroline Joe

of pride in how a project comes through from concept to realization," Yoo says.

Until 1999, the firm had occupied offices from duplexes to high-rises from Morningside to Buckhead.

"We knew we wanted to move outside Atlanta and we found Roswell's Mill Village a place that had some character and history," Lorenc says.

A renovated 100-year-old mill house in historic Roswell is a perfect reflection of their unique style. Close enough to Atlanta for business, the office is only about 100 yards from the entrance to a national forest where Lorenc hikes each morning. On evenings and weekends, he kayaks on the nearby Chattahoochee River.

The office's design came only after a great deal of work. The building was in such poor shape when the partners found it that they had to raise it five feet, then gut the interior. Now, the offices are a mélange of original elements, modern accoutre-

ments and personal touches.

Wherever possible, original materials were preserved, including 1920s pine flooring. The walls and ceiling expose 1-by-4 boards painted white to preserve a rustic feel. In an addition on the back and in a lower level loft space, the floor and wall boards and the ceiling beams were rotated 90 degrees to differentiate the new construction from the original structure. They used 1-by-8 boards in the walls to further delineate the new rooms.

The partners designed all of the furnishings, including a custom desk in Lorenc's office and cabinetry and shelves in a combination conference room/library. Eclectic lighting elements range from a stacked glass light tower embedded in the reception desk to the chandelier in Lorenc's office — a life-size angel Lorenc crafted by wrapping Yoo in yards of thin wire.

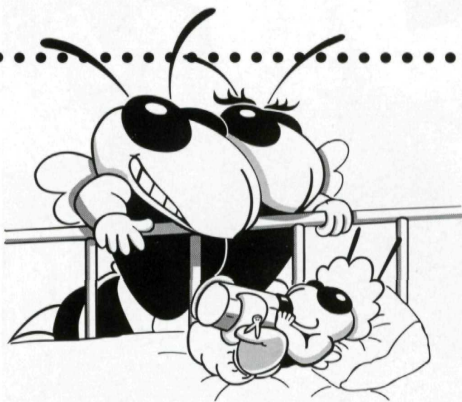
Everywhere — on shelves and hanging from walls and tucked into corners — are items Lorenc has either created or collected, from works of art

and whimsy to antique toys and folk art from around the world.

"We wanted more of a studio feel than you can get in an office building," Yoo says. The studio is a definitive statement of the firm's unique design style.

"After 23 years in business, Lorenc+Yoo Design has reached our goal of becoming a multidisciplinary firm involved in a variety of project types including museum exhibits, corporate museums, trade show exhibits, signage systems, furniture design, retail design and, now, even a theme park in Tokyo," Lorenc says. "It isn't just fashion or styling. We try to use elements and even materials reflective of the project's personality and its context."

For example, corporate information exhibits constructed for Georgia-Pacific at its distribution divisions in Atlanta and Denver were constructed entirely from materials produced by the corporation or used in its operations. A pavilion built for Habitat for Humanity at the Art Festival of



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Atlanta resembled a newly framed house accented with yellow utility marker flags.

A senior associate at the firm, David Park, ID 93, joined Lorenc+Yoo in 1997.

"In the industrial design department, the first hour of the design lab studio on Wednesdays was called Culture Hour and a professor had Jan come in. As soon as I saw his slide presentation, I said, 'That's what I want to do,'" says Park, who interned for the firm the summer before graduating. "I knew I wanted to work for someone who does highly custom design."

Park is currently working on the design of an Orlando, Fla., visitors center for Wycliffe Bible Translators, an international organization that translates the Bible, trains field personnel in linguistics and promotes interest in translation. Because the organization works in many Third World countries, the exhibit features representations of those cultures and will be built from materials germane to those developing areas.

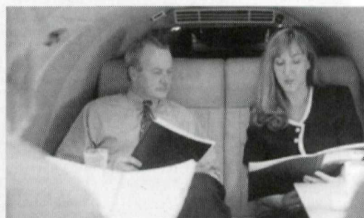
The firm is also working on the design of a children's museum for Myrtle Beach, S.C., that will combine educational and recreational elements in exhibits from a shrimp boat to a kid-size town with a miniature supermarket, police station and dentist's office.

"I look at what we do not as a commodity, but something true to the client's mission. Sometimes a client doesn't know what they want; that is why I like to hear it directly from their mouths, allowing our visual narrative to emerge," Lorenc says.

"That is also why I want to make our presentations to the decision makers. That way when I present a design, I can see their expression and sense how they feel about the design. The best design solutions evolve from client collaboration and belief in the project. A passion must be present." **GT**

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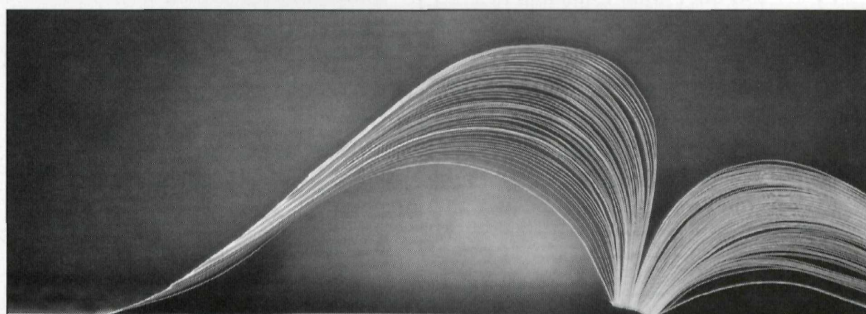
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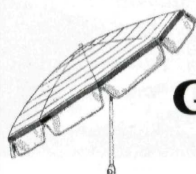


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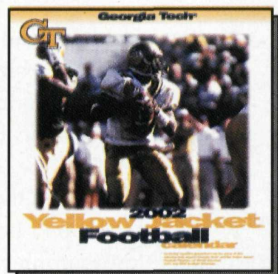
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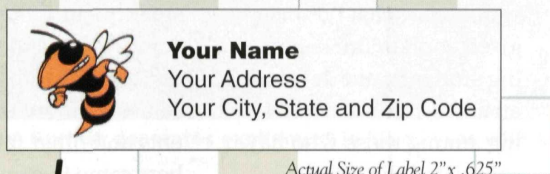
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Engineering Fun

Top teacher brings excitement, understanding to classroom

By Maria M. Lameiras

When he was a student at the Massachusetts Institute of Technology, Tom Kurfess never imagined he'd teach about teaching.

Today a professor of mechanical engineering at Georgia Tech, Kurfess is one of the faculty members responsible for redesigning a sophomore mechanical engineering class into a teaching tool that has universities like MIT and Carnegie Mellon clamoring for the formula.

"I wasn't actually plan-

ning on getting into teaching," says Kurfess, who has his bachelor's degree, two master's degrees and a doctorate from MIT. "I just thought I'd get my BS in mechanical engineering and get a job in industry and make a lot of money. Then I thought I'd better get my master's because I thought it would help me advance in industry. One thing led to another and I got another master's in electrical engineering and, by then, I figured I almost had my PhD so why not go ahead."

An adviser again de-

railed his plans to enter industry.

"He said, 'You should try a job in academia and if you don't like it you can always get a job in industry.' And here I am 12 years later," Kurfess says. "I absolutely love it. I have a great time. When you teach students something and they pick up on it and you see the lightbulb go on, it's just fantastic."

Before joining Tech's mechanical engineering faculty as an associate professor in 1994, Kurfess was an assistant and an associate professor at Carnegie Mellon University.

His primary teaching responsibility is ME 2110, Creative Decisions and Design, a class that has energized sophomore engineering students and developed an almost cult-like following among those who have completed the course.

"The students have to design and build devices for a competition. Each semester it is a different competition, and you have a new group of students, so it's like never teaching the same course twice," Kurfess says. "They have to do everything — strategy, mechanical system design, microcontroller system design and build it. It is one thing to draw something out on paper. It is another thing to build it."

The course gives the students hands-on experience with machine shop tools

they may not have had an opportunity to use before and a feel for the production side of mechanical design.

"Odds are, when they get a job, they won't be running this equipment, but they will be supervising the people who are running it to create the systems they are designing," says Kurfess, who apprenticed in a machine shop in his native Chicago before going to MIT. "It is one thing to think about an airplane and to say, 'I know how an airplane works,' but it is another thing to go build one."

Students who have completed the course often come back to watch each subsequent semester's competition and to cheer on their favorite teams. Last semester, more than 50 parents and other family members came to campus to watch the competition as well.

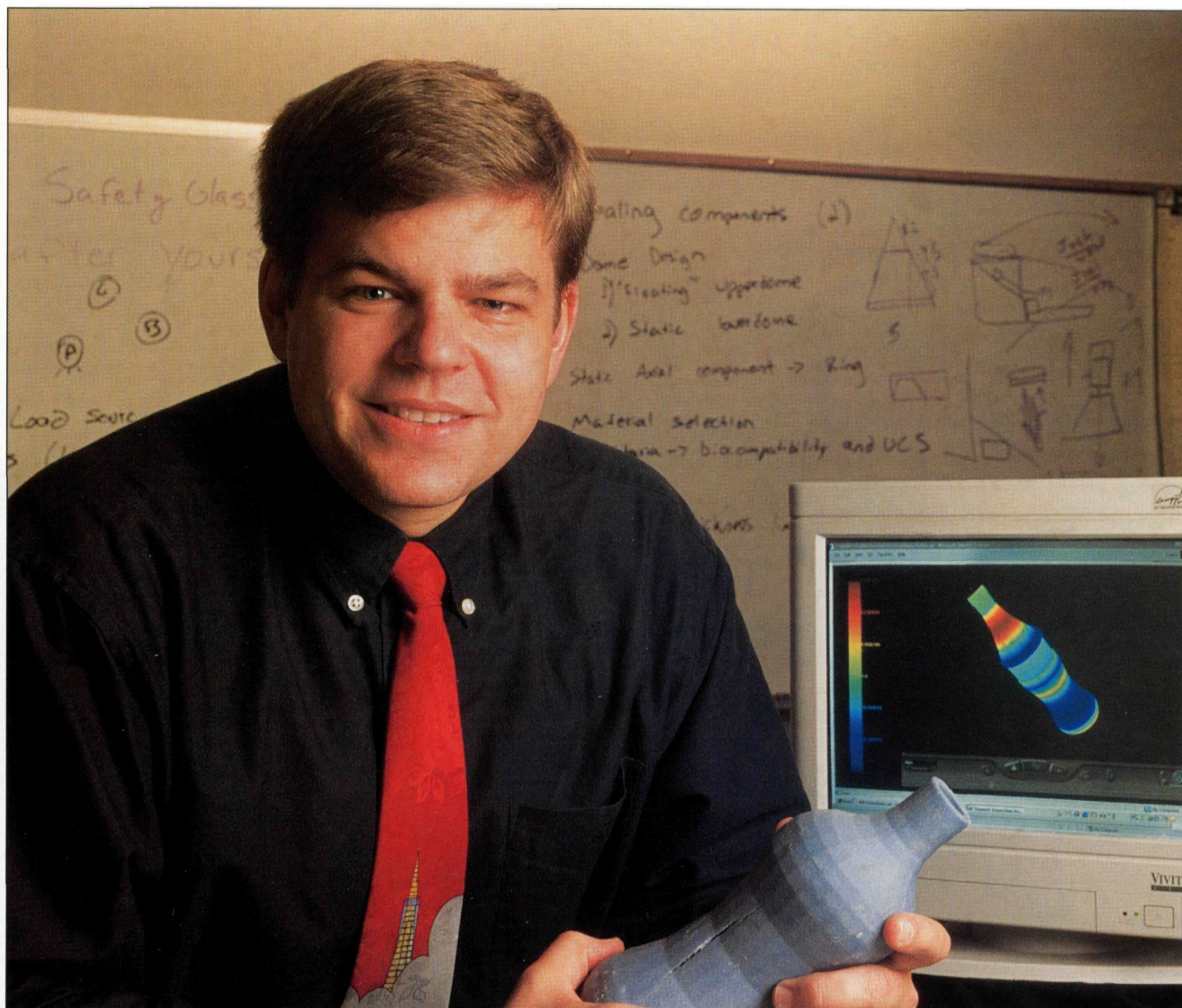
"They have a lot of fun," Kurfess says of the students. "They really get into it and I have to tell them they need to work on their other courses."

The course has been completely redesigned over the past four years by Kurfess and his colleagues in mechanical engineering.

"Every term we poll the students to see what they thought was hard and what they thought was easy and then we focus on the hard stuff, because you never

The Kurfess File

- **Born:** May 18, 1964, in Des Plaines, Ill.
- **Education:** BS in Mechanical Engineering, Massachusetts Institute of Technology, 1986; MS in Mechanical Engineering, MIT, 1987; MS in Electrical Engineering and Computer Science, MIT, 1988; PhD in Mechanical Engineering in Controls and Manufacturing area, MIT, 1989.
- **Personal:** Wife, Adriana Kurfess, research engineer, teacher and stay-at-home mother; three children: Rebecca, 6, Alexander, 4, and Gregory, 3.
- **Achievements:** The American Society of Mechanical Engineers Blackall Machine Tool and Gage Award, 2001; Georgia Institute of Technology Class of 1940 W. Howard Ector Outstanding Teacher Award, 2000; Society of Manufacturing Engineers Philip R. Marsilius Outstanding Young Manufacturing Engineer Award, 1996; American Society of Mechanical Engineers Pi Tau Sigma Gold Medal Award, 1995; National Science Foundation Presidential Faculty Fellowship Award, 1993; National Science Foundation Young Investigator Award, 1992.
- **Leisure Interests:** Spending time with family, running, cooking.



Professor Tom Kurfess generates excitement in his classes with a hands-on approach that makes engineering “really a lot of fun.”

want to give a Georgia Tech student anything easy,” Kurfess says with a laugh.

The course has captured the attention of universities all over the globe.

“I have been all over the world talking about this class,” Kurfess says.

“Schools all over creation want to replicate the class.”

Kurfess thinks it is important to give students examples of the exciting opportunities there are in engineering.

“The problem with engineering is kids don’t have any good role models out

there. Lawyers have ‘L.A. Law,’ doctors have ‘E.R.’ All engineers have is ‘Dilbert,’” he says. “I have headed panels for the National Science Foundation to see what we can do to increase student interest in engineering. We have to get past the appearance that it is not interesting. Engineers are the ones who are designing aircraft and spacecraft and cars — it is an exciting field to be in.”

He feels that is why Creative Decisions and Design has been such a hit.

“It gives the students

the opportunity to do exciting stuff right off. We wanted to give our students the opportunity to see that engineering is really a lot of fun while, in most traditional curriculums, the fun stuff doesn’t come until the end of their junior year or the beginning of senior year.”

The class is a lot of work too, and Kurfess tries not to forget what it was like to be a student.

“I have all of my old school notes in my office and one of the things I do is flip through them once

in a while and read all the little comments I used to write in my notes like, ‘What is he talking about?’ It helps me calibrate how I’m teaching,” he says.

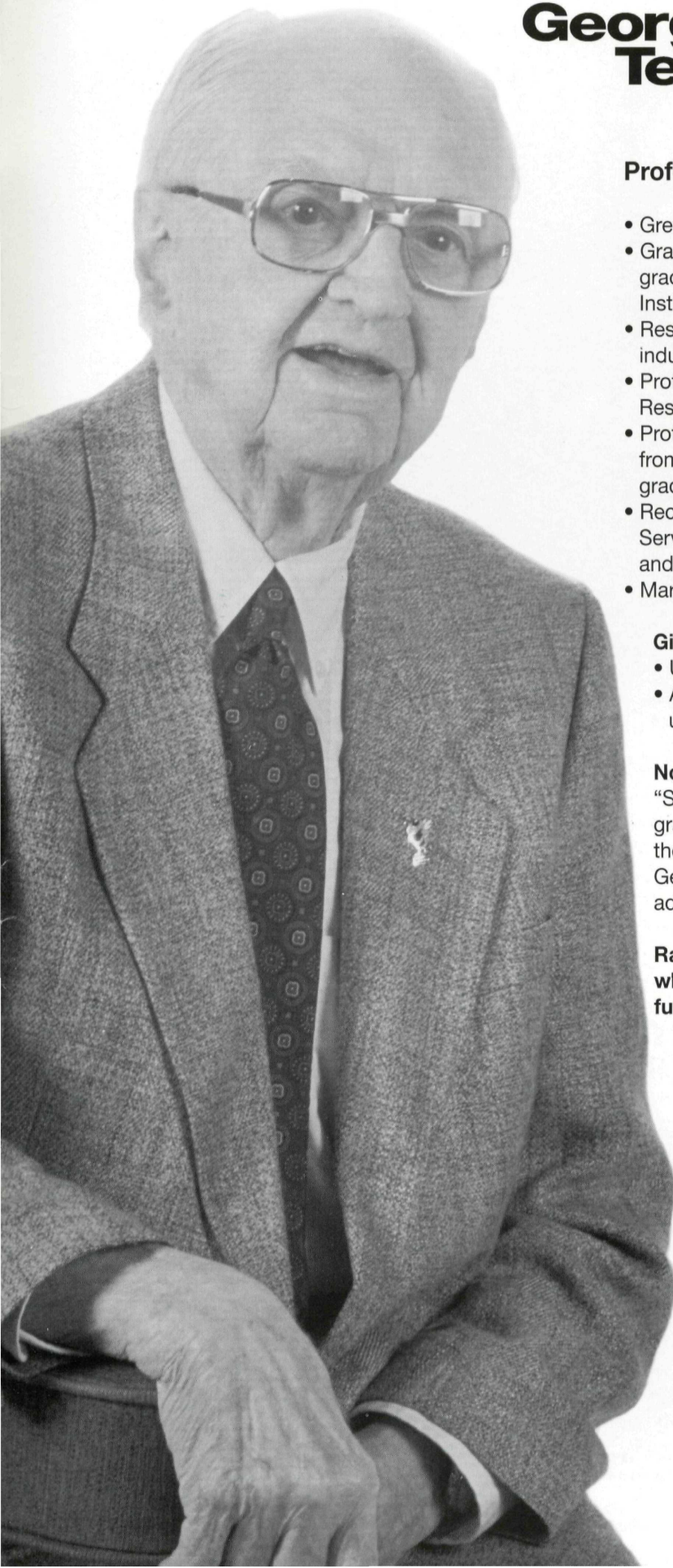
“One of the other faculty members explained it this way. You get this material as an undergraduate student, then you see it again as a graduate student, then you teach it for five or 10 years and you get pretty good at it. But you have to look back and remind yourself that it wasn’t always as easy as you think it is now.” **GT**

Caroline Joe

Pulling the Plug

Buzz gives a mighty heave from atop the high dive as he helps pull the plug to drain the Aquatic Center pool at the Student Athletic Complex on Nov. 28. The Aquatic Center played host to swimming and diving events during the 1996 Olympic Games, but the open-air design prevents Tech from using the pool for competition during cold weather. To transform it into a year-round facility and a world-class venue for NCAA swimming and diving events, workers are enclosing the Aquatic Center. Two floors also are being added above the pool level for basketball courts, a gym and a jogging track. **GT**





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- Professor of textile engineering and director of the Textile Research Laboratories at Texas Tech University in Lubbock
- Professor in Georgia Tech's School of Textile Engineering from 1960–1972, developing research programs for graduate students
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