

# The GTRI Connector

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## On Marriage and Children

- Even if marriages are made in heaven, man has to be responsible for the maintenance.  
—John Graham
- The only time the average child is as good as gold is on April 15.  
—Ivern Boyett
- Perfect love sometimes does not come until the first grandchild.  
—Welsh proverb

## What can you do with old tires? Use them to clean up wastewater!

By John Toon, RCO

GTRI scientists hope to use one environmental problem to solve another. They are studying how old automobile tires can help clean up the wastewater from food processing plants. The tires, available at little or no cost, would replace expensive plastic media normally used to fill wastewater treatment vessels.

For the past year, the scientists have operated laboratory-scale treatment reactors to compare the effectiveness of the shredded tires against conventional materials. "Right now, the tires look pretty good," says Chuck Ross of the Environmental Science and Technology Lab. "In fact, the tire-filled reactors seem to be outperforming the conventional ones." If successful in large-scale operations, use of the tires could significantly lower capital investment costs for a range of waste treatment facilities.

The experimental work involves anaerobic packed-bed reactor technology, which uses microbes to degrade the wastes into

combustible gases. This technology is already widely used to treat wastes from food processing, industrial, municipal and even hazardous chemical operations.

Although they work well, the anaerobic reactors are expensive to build. The two most substantial costs are for the plastic media, which provide a home for the microbes, and for the large treatment tanks. To help make the systems more cost-effective for the food processing industry, Ross and his colleagues have been looking for a way to cut these costs.

The tires do have some disadvantages, however. They are heavier than the plastic media and thus would require more support structure in the tanks. And there are concerns about chemicals and oils that may leach out of the tires. Ross hopes to find answers to those questions as tests continue on the small-scale reactors. The next step would be to test the shredded tires in larger reactors before they are tried in a full-sized wastewater treatment plant.

### Other economizing studies

GTRI researchers also are examining other ways to make the anaerobic packed-bed reactors more economical.

Because the microbes live best at temperatures of around 100 degrees F., the treatment reactors must be heated. This energy input adds to the operating costs of the system, even though some of the fuel can come from biogas produced by the microbes. Ross and company are studying how well the reactors work at slightly cooler temperatures. Because the microbial activity is slower at those temperatures, the systems would need larger vessels and, therefore, a higher initial investment. But the researchers expect the higher



Research engineer Chuck Ross (ESTL) draws a sample from test reactors which use shredded tires to clean wastewater. (Photo by Joe Schwartz)

investment could be recovered by lower operating costs over the life of the system.

The team also is investigating how much packing material must be placed into the packed-bed reactors. If the system could operate with smaller amounts of media, that also could lower the cost.

Although the work is aimed at making the technology economical for the poultry industry, Ross believes it could help lower costs for other food processors, industrial firms, municipal operators, and even chemical manufacturers who use the technique to handle their wastes.

The research has been sponsored by the state of Georgia. □

## Observed & Noted

Georgia Tech will host the First International Aerial Robotics Competition and field a student/faculty/industry team. *Details are on page 2.*

A GTRI research scientist is collaborating on a research project to help her home country of Bulgaria understand

its environmental crisis. *Read about it on page 3.*

The Persian Gulf War touched many of us personally. *A GTRI parent shares thoughts and emotions he had while his son was in combat on page 4.*

*A round-up of GTRI participation in*

*Southcon/91 is on page 4.*

ESTL has established an annual workplace safety and health award in memory of former program coordinator, Lois Nelson, who died last year. The first award was presented at the annual Southeastern

Safety and Health Conference. *Stories are on page 5.*

Ann Campbell gives a rundown on services offered by commercial database vendors in her **Information, Please!** column. *See page 6.*

*Also on page 6, find out about the Dia-*

*logue Box, a new feature in the CONNECTOR that will give you, the reader, a forum for questions and suggestions.*

Long-time GTRI employees Jerry Eaves and Bob Collier were honored recently with retirement lunches. *Take a retrospec-*

*tive look at their careers on page 7.*

GTRIers have been busy presenting papers, publishing articles, starring in videos, judging student competitions, getting advanced degrees, receiving awards, winning sports competitions, having babies... *See employee news on page 8.*



**News  
&  
Notes**

**Georgia Tech  
to host student  
aerial robotics  
competition**

By Martha Ann Stegar, RCO

Imagine a student competition where everyone is a winner; a contest that benefits all the participants—students, faculty, universities, industry, government—whether or not they are on the winning team. GTRI's Rob Michelson has come up with such a contest—the First International Aerial Robotics Competition.

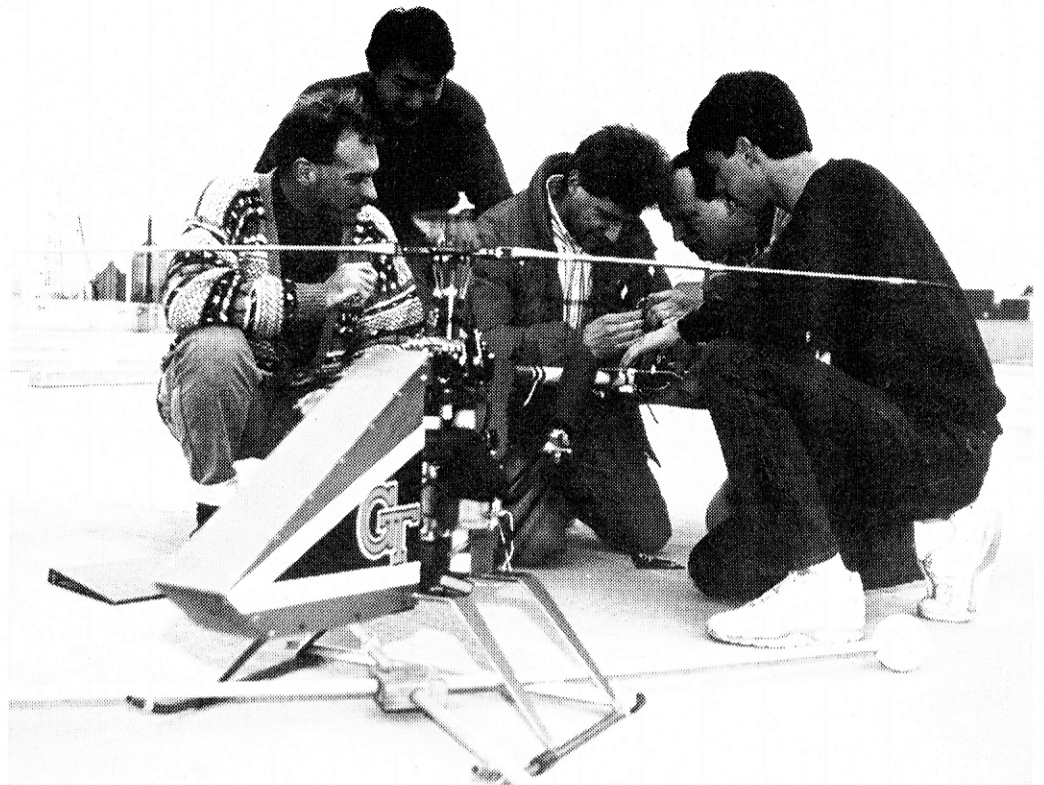
The competition is sponsored by the Association for Unmanned Vehicle Systems (AUVS), and will be held on the Georgia Tech campus July 29. The event is the brainchild of Michelson, who is first vice president and technical chairman of AUVS.

"AUVS was looking for a way to encourage aspiring engineers and scientists to pursue careers in fields allied to unmanned systems technology," says Michelson, "particularly in the more difficult realm of unmanned aerial vehicles. A strong design and manufacturing capability in this field will be vital to our nation's commercial and military sectors in the 21st century, and we want to encourage our brightest and best students to work in this arena."

The competition will offer a significant challenge. The competing vehicles must be unmanned and autonomous—no control tethers are permitted. Their task: to transfer six randomly placed metal disks from one side of a volleyball court over a three-foot-high central barrier to the other side of the court, one at a time and within three minutes. "The vehicles must compete based on their ability to sense the structured environment of the competition arena," Michelson emphasizes.

Seven teams will compete: Georgia Tech, California Institute of Technology, Massachusetts Institute of Technology, University of Texas, California Polytechnic University, University of Alabama, and University of Dayton (Ohio). Representation almost was international, but the team from Edinburgh University (U.K.) decided they couldn't get their entry ready in time and withdrew.

Each team has one or more industrial partners, which can be companies, governmental agencies, or university faculty; however, the students are required to make significant contributions to the development of their entry. The Georgia Tech team is composed of an interdisciplinary group of 22 graduate and undergraduate students led by Steve Ingalls, a graduate student in Aerospace Engineering. Faculty advisers are Ron Arkin, College of Computing; Dan Schrage, Aerospace Engineering; and George Vachtsevanos, Electrical Engineering. One of Tech's industrial partners, Pacific RPV, Inc., has supplied a small radio-controlled helicopter. Other partners are Mitre Systems, the U.S. Army Aerostructures Directorate at NASA-Langley, and Guided Systems Technology of Atlanta.



**The Georgia Tech entry in the first Association for Unmanned Vehicle Systems (AUVS) International Aerial Robotics Competition, to be held on the Tech campus July 29. (Photo by Gary Meek)**

Students on the winning team will receive a total of \$10,000 in cash tuition awards; their industrial partners will receive a free full-page advertisement in *Unmanned Systems* magazine. All will receive special recognition at the AUVS national symposium, to be held in Washington, D.C., August 13-15, including free attendance at the symposium, an invitation to display the winning air vehicle, and the opportunity to present a paper detailing winning design and construction strategies for inclusion in the conference proceedings.

But every university entering the contest will benefit from the national exposure, according to Michelson. "Interest in the competition is high, and the event will be televised as part of the Scientific American Frontiers Series," he says. Students will gain from applying their skills to a practical problem. And there already is fallout at Georgia Tech from the project—Dan Schrage is teaching an interdisciplinary CIMS course (Introduction to Concurrent Engineering) that includes design of this vehicle.

"Industry benefits by closer ties with academia, exposing potential future employees to the company and possibly profiting from innovative product-related spin-offs that may result from the student interaction. And government agencies benefit from the demonstration of applied technology which may be leveraged to meet national needs," Michelson adds.

"Society will rely ever more heavily on unmanned systems in the future," Michelson says, "not only in the indoor or factory environment prevalent today, but also in the more difficult, less structured outdoor environment—whether it be on land, in the air, or in the water. For instance, the Gulf War is the first war since Vietnam to use unmanned systems extensively. We went into Kuwait a day early because we sent out small unmanned aerial reconnaissance vehicles which showed that critical Iraqi emplacements had been abandoned. These vehicles also were used for damage assessment. The Tomahawk cruise missiles launched from our ships to bombard Baghdad are another example."

Michelson, a 17-year veteran at GTRI, is a senior research engineer in the Aerospace Science and Technology Laboratory and serves as a point of contact for unmanned systems research at the Institute. □

**GTRI in the news**

GTRI national research publicity in January and February included the following:

- *Popular Science* (1.8 million circulation) published a photograph of the outdoor compact range built at Fort Huachuca.
- Research on the use of old tires for wastewater treatment was the subject of articles in *Engineering Times* (75,000), *Environment* (15,000), *Pollution Engineering* (52,000), *American City & County* (68,000), *Civil Engineering* (106,000), and *Water and Pollution Control* (24,500). (See article in this issue of the CONNECTOR.)
- GTRI comments on the extent and importance of lead paint poisoning were the subject of an article in *In Health* (500,000).
- Based on an article in Georgia Tech's *Research Horizons* magazine, *Design News* (170,000) included Tech research in an article about electroactive polymers.
- The Center for Optical Science and Engineering, in which GTRI is a participant, received notice in several important technical publications, including *Laser Focus World* (60,000), *Lightwave* (25,000), *OE Reports* (75,000), *American Ceramic Society Bulletin* (17,000), *Inside R&D*, *Fiberoptic Product News* (27,500), and *In Tech* (56,000). Nearly 280,000 readers have seen the announcement of the Center's formation.
- *Research & Development* (120,111) carried two significant Georgia Tech mentions: Dr. Demetrius Paris was interviewed concerning funding for research, and Dr. Fred Eisele's work in measuring the OH radical was included in an article about instrumentation. □

**The First International Aerial Robotics Competition sponsored by the Association for Unmanned Vehicle Systems will take place July 29 on the Tech campus.**



## Bulgarian researcher is helping her home country understand its environmental problems

By Mark Hodges, RCO

Since the Iron Curtain collapsed in 1989, Eastern Europe's new governments have struggled to clean up environments ravaged by industrial pollution.

Western democracies and nongovernmental organizations are supporting their efforts. And in one of these programs, a GTRI research scientist is helping her home country of Bulgaria manage its environmental crisis.

Collaborating with five American and four Bulgarian scholars, Dr. Krassimira (Krassi) Paskaleva is studying the impact of political and economic restructuring on the effectiveness of Bulgaria's environmental control programs.

Paskaleva, who joined GTRI this spring, is one of four principal investigators in a three-year, \$432,000 grant project sponsored by the MacArthur Foundation's Program on Peace and Internal Cooperation. Over three years, the group will compare environmental conditions before and after Bulgaria's transition from a centrally planned to a more entrepreneurial economy.

By focusing on the period from 1990 to 1993, the researchers hope to see how much—and what kind of—difference the restructuring process has made on environmental management. The project's ultimate aim is to suggest ways that the values of economic development and environmental protection can be reconciled in a rapidly developing country that is receptive to environmental improvements.

Most of the Eastern European countries have long histories of heavy industrialization. However, until the mid-20th century, Bulgaria's economy was primarily agricultural, and during the time of Josef Stalin, it was viewed as one of the Soviet Bloc's primary breadbaskets. Since the 1950s, the country has undergone extremely rapid industrialization that has left it with severe pollution.

Paskaleva's group has chosen to investigate environmental conditions in a single region in southeast Bulgaria—the Burgas, one of the country's fastest developing areas. According to Paskaleva, the Burgas is "fruitful soil for research," in part, because of its diverse—and often conflicting—blend of agricultural, petrochemical, heavy machinery, and tourism industries. Another factor in the Burgas region's selection for the case study is its proximity to the Black Sea and Bulgaria's international border with Turkey.

Together, these attributes will allow Paskaleva and her fellow researchers the luxury of using a relatively small geographic area to study a variety of critical environmental issues of regional, national and international importance.



*ESTL scientist Krassi Paskaleva stands in front of a map of her native country, Bulgaria, in her office in the O'Keefe Building. She is collaborating with American and Bulgarian scholars on a study of the impact of political and economic restructuring on the effectiveness of Bulgaria's environmental control programs. (Photo by Rae Adams)*

### Political changes/ environmental effects

Under its Communist regime, environmental regulation in Bulgaria was uniformly governed at the national level. However, the country's new environmental legislation, modeled in part after Scandinavian law, attempts to transfer some of the responsibility for pollution control to Bulgaria's 28 regional inspectorates.

According to Paskaleva, the new law is "well intended," but it remains questionable whether greater local control will translate into a cleaner environment. It is quite possible, she says, that decentralized management could promote the private interests of Bulgarian manufacturers and foreign investors at the expense of community needs. And decentralization also may remove incentives of regulators to control pollutants that cross international boundaries or regional borders within Bulgaria.

During the first year of the study, environmental conditions in Bulgaria have been affected more by international events than by the impact of new schemes of regulation. During the Persian Gulf war, says Paskaleva, Bulgarians endured eight months of gas shortages and rationing that severely reduced automobile travel. As a result, air pollution in cities was "much improved" for reasons having nothing to do with new environmental policies.

Citizen protest also has affected environmental conditions in the country, she says. Public opposition and actions against highly toxic plants caused several shutdowns pending the adoption of new technologies and safer waste disposal measures. A second nuclear power plant construction project also was stopped because of popular unrest.

Paskaleva will get a chance to look at current conditions in Bulgaria firsthand in a field trip that begins in June.

### From Bulgaria to Georgia Tech

A year and a half ago, Paskaleva had no idea that she would be pursuing these concerns from Georgia Tech. A native of the Bulgarian city of Veliko Turnovo, she had received her doctoral degree in economic geography from the Bulgarian Academy of Sciences and remained at the Academy as a

research scientist. In 1989, she traveled to West Virginia University's Regional Research Institute as a visiting scholar. She and her husband, Dr. Phillip Shapira, moved to Georgia Tech earlier this year. Shapira is a professor in the School of Public Policy and a team member on the Bulgaria environmental research project. Paskaleva is a research scientist in GTRI's Environmental Science and Technology Laboratory (ESTL).

Since Paskaleva's arrival at Georgia Tech, she has met several times with members of ESTL's environmental research and technical assistance program, looking for ways that the laboratory can become involved in programs to ease Eastern Europe's environmental crisis. One proposal would be for ESTL trainers to lead seminars in Bulgaria to help governmental and industrial managers improve their understanding of environmental control techniques. Another proposal would be to organize an international U.S.-East European conference on implementation of sound environmental policies in former Communist countries. Bulgarian environmental officials are interested in GTRI assistance, Paskaleva says; however, the country's continuing financial problems require that Western sponsors for such projects be found.

In the meantime, Paskaleva is working with her colleagues at other institutions on the MacArthur Foundation grant and on another proposal recently approved by the National Science Foundation to study the spatial development impacts of restructuring in Bulgaria. □

***Extremely rapid industrialization of Bulgaria under Communism has left the country with severe pollution problems.***



**Profile  
&  
Insight**

**A parent's  
perspective  
on the war**

By Lee Hughey, RCO

It is one thing to listen to war stories from friends and acquaintances. It is quite another to watch as your child — not a child anymore — goes off to war. Such is the dilemma a parent faces. Pride is hard to contain, but concern is even harder to suppress.

I remember thinking, as my 27-year-old son, Rich, prepared to depart for the Middle East, that this might just be a show of force, and that he would probably not be in great danger. However, flying the F-14 Tomcat from the aircraft carrier USS America is risky, even without hostilities.

My confidence, however, was strong since my son was well trained and had the best, most effective equipment in the world. I believed this, in part, because of Georgia Tech's contribution to many of the hardware and software systems deployed in the war zone. I also knew he was well prepared physically and mentally because of his training and competition as a world-class swimmer in high school and college.

During the months preceding the Persian Gulf conflict, as the war of words was waged, it seemed that the shooting would be averted at the last moment. It wasn't! Soon after the war began, my son went into combat.

When President Bush announced on Wednesday, January 16, that U.S. and coalition air forces had attacked military and strategic targets inside Iraq, I could only wonder whether Rich was involved. Due to tight security about when and where missions were flown, it was some time before I knew for sure that he did not fly any missions the first day of the war. But within two days after the war began, he was in the air defending the battle group and later flew missions over Baghdad both day and night.

The prospect of my son being in harm's way was very unnerving at times, especially when daily reports of downed aircraft were given by Pentagon briefers. Though the anxiety level began to build, I had faith in God that he would be protected.

Early in the campaign, I, like most people, hung on every event and bit of news that emerged. But as time went by, I had to discipline myself to watch TV and listen to the radio reports only once in a while. My co-workers kept me informed anyway.

As days turned into weeks, I kept informed, but tried not to be consumed by things I could not control. In a sense, the less I knew about details—even though I craved them—the better for my peace of mind. When the war ended, and I knew his job was done in this conflict, I was greatly relieved and thankful.

Two things stand out in my memory of having a son at war. One was the great support for what he was doing for his country, and the other was the tremendous amount of encouragement given to our family by friends, co-workers, and even strangers. It was truly amazing, and I shall never forget the concern and kindness shown by others.

I only hope and pray we don't have to go through another war.

*"My confidence (during the Gulf War) was strong since my son was well trained and had the best, most effective equipment in the world. I believed this, in part, because of Georgia Tech's contribution to many of the hardware and software systems deployed in the war zone."*

—Lee Hughey

**Editor's Note:** We would like to publish a list of close relatives of GTRI employees who served in the Gulf War as members of the U.S. armed forces. The list may include your spouse, parent, child, sister or brother. Please send us the name, rank, and service affilia-

tion of your relative, along with your name, your GTRI unit, and the person's relationship to you. Address your response to Editor, GTRI CONNECTOR, RCO/GTRI 0800, or PROFS MSTEGAR. □



The Georgia Tech booth at Southcon featured Tech's famous interactive Olympic video system. Other displays were mounted by GTRI, the Interdisciplinary Programs Office, and Education Extension Services. (Photo by Joe Schwartz)

**GTRI staffers  
prominent in  
Southcon/91**

Dr. James C. Wiltse was chairman of the Executive Committee and John Rohrbaugh served on the Technical Program Committee of Southcon/91, held March 26-28 at the Georgia World Congress Center in Atlanta. Rohrbaugh, Eric Barnhart, and David Hughes organized and chaired technical sessions. And the Manufacturing Research Center's Laura Turbini conducted a tutorial on "Electronic Assembly in the 1990s—How to Succeed without CFCs."

GTRI Associate Director Gerald Carey gave a special report, sponsored by the IEEE Atlanta Section, on the contribution of electronic technology to the U.S. mission in the Persian Gulf.

Georgia Tech also had a large exhibit booth featuring the multimedia interactive system used to secure Atlanta's bid for the 1996 Olympics, as well as activities of GTRI, the Interdisciplinary Programs Office, and Continuing Education.

GTRI speakers at Barnhart's session, "Advances in Wireless Communications Systems and Technology," were Leslie Pickering, Michael Witten, and Barnhart. They discussed "Characterization of Indoor Propagation for Personal Communication Services."

Hughes spoke on "Prevention of Electrostatic Discharge Damage to Electronic Devices and Circuits" at the session he organized.

At Rohrbaugh's session, he spoke on "Transient Protection and Test Procedures," and Hugh Denny spoke on "Grounding for Transient Protection."

Some 6,000 people attended Southcon. □

**GTRI getting new  
promotional  
materials**

GTRI is getting a collection of new research promotional materials for use in contract marketing efforts.

At the request of the Program Development Office, Research Communications (RCO) has prepared a new portfolio for assembling brochures, flyers and other written materials. The cover of the portfolio contains several four-color photographs of GTRI research activities along with the new organizational logo. Inside the portfolio is a capsule description of GTRI and a jacket for holding written materials.

Approximately 5,000 copies of this portfolio have been printed and can be obtained by calling RCO at 894-3444.

In the other phase of this project, RCO is compiling a collection of 2,000 promotional flyers on each GTRI laboratory and Program Area Development Committee (PADC), as well as several of its federal field offices. These flyers include basic information on GTRI operational units and PADCs, in a format that will be easy and inexpensive to update. These materials all reflect a common design theme.

A set of flyers has been completed for the Electronic Defense PADC and six of its laboratories. RCO hopes to develop and print materials for other organizational units in the next several months.

These new promotional materials will supplement GTRI's external annual report, its abbreviated GTRI brochure, and the Senior Technology Guidance Council's *Research Initiatives* brochure, the third edition of which was published earlier this year.

To learn more about the project, please call Mark Hodges at RCO, 894-6987. □





Seven members of Lois Nelson's family attended the ceremony in her honor and witnessed the presentation of the first annual Lois A. Nelson Memorial Award at the Southeastern Safety and Health Conference. Left to right: the fiancé of Christine Nelson; daughter-in-law Leah Nelson; daughter Christine Nelson; son Bill Nelson; son John Nelson; R. Davis Layne, OSHA Regional Administrator for Region IV, accepting the award for Alan C. McMillan; Dr. John C. Nemeth, Director, Environmental Science and Technology Laboratory; daughter Barbara Castleberry; son-in-law Curtis Castleberry. (Photo by Rae Adams)

## ESTL creates Lois A. Nelson Award

**A**lan C. McMillan, Deputy Assistant Secretary of Labor for the Occupational Safety and Health Administration (OSHA), was the recipient of the first annual Lois A. Nelson Memorial Award, presented by the Environmental Science and Technology Laboratory (ESTL) March 18 at its annual Southeastern Safety and Health Conference. Mr. McMillan was recognized for his significant contributions to workplace safety and health in the southeastern United States.

The Lois A. Nelson Award honors the memory of a former ESTL employee who was killed in an automobile accident last August. Lois joined GTRI in 1983 as a program coordinator in ESTL's Training Programs Office. Her hard work behind the scenes made her a valuable resource to the program directors with whom she worked. Management felt that it was particularly appropriate that this award be presented at the Southeastern Safety and Health Conference because her untiring efforts helped to establish the conference as the premier gathering of safety and health professionals in the region.

"Lois was a quiet, hardworking individual who never sought the limelight," observed ESTL Director John Nemeth. "But her colleagues recognized the importance of the role she played and valued her as a team member. She continues to be missed."

Seven members of Lois's family were among the more than 400 people attending the presentation ceremony. □

## Conference addresses major safety and health issues

By Carrie Stikeleather, ESTL

**O**SHA's new non-compliance penalties are as tough as their new safety standards. Offenders now face fines seven times as high as in the past: from \$700 for serious violations to \$1,000 for repeat violations, with penalties for willful violations set at \$7,000. And two consecutive budget increases of 10% each, as well as a full complement of compliance personnel on staff, give OSHA the clout it needs to enforce the new regulations.

Addressing the question *What Are the Major Safety, Health and Environmental Issues for the 1990s and Beyond?*, keynote panelists at the 1991 Southeastern Safety and Health Conference talked about OSHA's new plan of action and urged conference attendees to take heed. The annual conference was presented by GTRI's Environmental Science and Technology Laboratory (ESTL) in conjunction with the National Safety Council, the Georgia Safety Council, and the City of Atlanta's Risk Management Division.

The panelists discussed OSHA's new initiatives as they relate to 36 high-risk industries, including meatpacking, petrochemical and logging operations. They also addressed new standards relating to safety belts, lock-out/tagout, and fall protection—issues that cut across all industries.

The conference was held March 18-20 at the Hyatt Airport Hotel in Atlanta. Enrollment was more than 400 attendees, a 30% increase from attendance at the 1990 conference. A product and service exhibition was held concurrently, with 30-plus exhibitors ranging from safety equipment suppliers and consulting firms to occupational health clinics.

Of the more than 40 speakers, nine from ESTL addressed issues such as hazard communication, SARA Title III, storm-water runoff, reproductive health hazards in the work-

place, and ergonomics. Other presentations included emerging trends in environmental regulations and awareness, current issues in occupational hearing conservation, indoor air quality, electrical safety, confined space entry procedures, and OSHA's on-site inspection and penalty system.

Planning already is under way for the 1992 conference. One addition to the agenda will be a safety and health essay contest among public school children, to be held in cooperation with the University of Georgia. □

## Student round table fosters leadership

**T**he Georgia Tech Executive Round Table is a venerable student-led organization of several decades, and GTRI personnel participate as both faculty members and as speakers. John Nemeth was the speaker at the April meeting, providing background for discussion on environmental issues. Pat O'Hare is a member of the Round Table, as is GTRI's Ron Bell.

The Executive Round Table is composed of carefully selected students, faculty members, and industry representatives. Each month, the group holds a dinner meeting featuring a provocative guest speaker, followed by round-table discussions of the topic of the day. Once a year, in May, the group has a three-day retreat at Callaway Gardens with some eight invited guests to lead the discussions.

The organization is run by a student board of directors, who select the members. Student members rotate annually; the faculty and industry members are permanent.

According to O'Hare, approximately 100 people attend a given meeting, some two thirds of whom are students and one third faculty and industrial members (including prominent alumni). He says the cost of participation is not trivial timewise—but finds the activity rewarding. "It's another way GTRI can be involved in student life," he comments. □

## News & Notes

*The Lois A. Nelson Award honors the memory of a former ESTL employee who was killed in an automobile accident last August.*

*Georgia Tech*  
RESEARCH INSTITUTE



## Queries & Quotes

*"We in OOD have long felt the need for a convenient avenue for two-way communications at GTRI. We want everyone in GTRI to feel free to convey their ideas and know that someone is listening."*

*—Pat O'Hare*

## Information, Please!

### Do your own literature searching... Going beyond GTEL

By Ann Campbell, Library

**D**id you ever search one of the Georgia Tech Electronic Library (GTEL) databases and wish you could search items written before 1986? And what about doing your own searches in other databases: AEROSPACE or NTIS for technical reports, or MATHSCI, CHEMICAL ENGINEERING, POLLUTION ABSTRACTS, or MEDLINE for specialized subject coverage?

You *can* depend on the Library staff to run computer searches for you. If you want to do your own searching, consider signing up for one of the evening services offered by database vendors.

#### KNOWLEDGE INDEX and AFTER DARK

KNOWLEDGE INDEX on DIALOG Information Services is an easy-to-use menu-driven system that gives you access to more than 80 databases, including:

- AEROSPACE, 1962—
- AGRICOLA, 1970—
- CURRENT BIOTECHNOLOGY ABSTRACTS, 1983—
- CHEMICAL ENGINEERING ABSTRACTS, 1971—
- ENGINEERING LITERATURE INDEX, 1970—
- INSPEC, 1969—
- MEDLINE, 1966—
- NTIS, 1964—
- PAIS (public affairs), 1976—
- POLLUTION ABSTRACTS, 1970—
- PSYCINFO, 1967—

This service is available from 6 p.m. to 5 a.m. Monday through Thursday and from 6 p.m. Friday through 5 a.m. Monday. The \$35 start-up fee includes a user's workbook, quarterly newsletter, and a credit for two hours of searching in the first 30 days. On-line searching, including telecommunications charges and on-line record displays, is billed at 40 cents per minute. A toll-free customer service hotline is available for search help.

The Library has KNOWLEDGE INDEX brochures, or you may call DIALOG at (800) 334-2564 for additional information or to sign up.

AFTER DARK on BRS Information Technologies/Maxwell On-line is another menu-driven system that provides access to more than 100 databases. AFTER DARK has many of the same databases included in KNOWLEDGE INDEX, and adds several other databases:

- ABI/INFORM (business), 1971—
  - BIOSIS, 1970—
  - CA SEARCH (chemistry), 1970—
  - CURRENT CONTENTS, most current 3 months
  - FAIRBASE (trade shows, conferences), 1966-2010
  - PATDATA (U.S. patents), 1975—
  - SOCIAL SCISEARCH, 1972—
- One important exception: AEROSPACE is

unavailable in AFTER DARK.

AFTER DARK is available from 6 p.m. local time to 4 a.m. eastern time Monday through Friday, Saturday 6 a.m. to 2 a.m. (ET), and Sunday 9 a.m. to 4 a.m. (ET). The \$75 one-time subscription fee includes a user's manual, monthly newsletter, and toll-free support hotline. A \$12 monthly minimum is applied toward your monthly on-line use. Databases are priced from 17 cents to \$1.35 per minute, including telecommunications. Most displays are priced from zero to 65 cents each, with an average of 10 cents per item. The DISCLOSURE database displays are priced at \$5.20 and \$11.20 each, so check your price list before you go on-line. The Library has a folder describing the AFTER DARK service, or you may contact BRS Telemarketing at (800) 955-0906.

#### Daytime MENUS service on DIALOG

If you want an easy-to-use menu service during the daytime, the new MENUS service on DIALOG will interest you. MENUS brings you 200 of the most popular databases. Databases on MENUS are charged at the standard daytime search and display rates. Most database connect charges are between \$1.50 and \$3.00 per minute. Display prices vary from 50 cents to \$1.00 per item. Some databases are more expensive, so check your price sheet before you log on. Call DIALOG at (800) 334-2564 for additional information or to sign up.

Call me in the Library at 894-4511 for information about these services or any other information needs you may have. □

## Dialogue Box

### Here's your chance for dialogue with management

**D**o you wish you didn't have to wait for the once-a-year "GTRI—Present and Future" meetings to express your questions and concerns to GTRI management? Now you don't!

A brand new feature, called the DIALOGUE BOX, is starting in the GTRI CONNECTOR. It will depend upon you, the reader, for input. So get ready to send your questions, concerns and suggestions to the Editor, GTRI CONNECTOR, RCO/GTRI 0800, or PROFS MSTEAGAR. I will pass them on to GTRI Director of Support Services Pat O'Hare, who will take responsibility for seeing that appropriate action is taken.

"We in OOD have long felt the need for a convenient avenue for two-way communications at GTRI," says O'Hare. "We want everyone in GTRI to feel free to convey their ideas and know that someone is listening."

OOD is looking for not only your questions, but your suggestions as well. "For instance, people may have some good ideas for ways to save money on the job or more efficient ways to do things," O'Hare says.

He promises that every question asked in good faith will be answered by an appropriate person and that every suggestion offered will be acted upon. "We may decide to implement the suggestion, modify it, or reject

it," he says, "but it will receive serious consideration."

He also says that management will be selective as to the questions that will be answered in print. "Some questions may be so specific or limited in interest that it will be more appropriate to give the inquirer a private answer," he explains.

Although items may be submitted anonymously, questions cannot be answered privately unless the sender gives an address for the response. For items published in the CONNECTOR, the name of the person submitting the item will not be revealed unless he or she requests it. "Of course, anyone who submits a suggestion that is implemented will get credit for it," O'Hare guarantees.

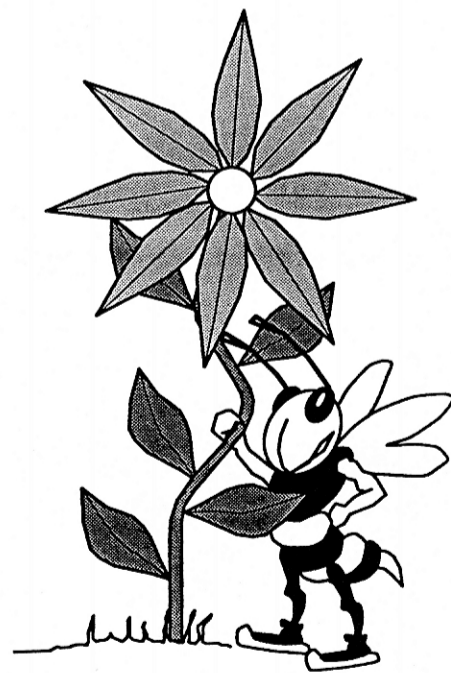
The DIALOGUE BOX is now open for business. We eagerly await your response. □

### Calling for volunteers...

**T**he Yellow Jacket Bowling League has a long and illustrious career, and many GTRI staffers have enjoyed participating. But our employees must have many other interests that could benefit by a dose of "togetherness" as well. So OOD is soliciting volunteers to convene some special interest groups, such as a photography club; bicycling, hiking or camping enthusiasts; basketball or softball teams; bridge clubs; theater groups—any legitimate interest that employees would like to share. They could be noon-time get-togethers or meet at other convenient times.

"GTRI is a family," says Pat O'Hare, who is promoting the idea, "so let's plan to do some things together as a family. I would love to see special events such as GTRI night at DramaTech, for example."

How about it, folks? The GTRI CONNECTOR offers its pages to run any ads or announcements by GTRI employees who are looking for like-minded people to join together in mutual recreational pursuits. Send 'em in, and we'll print 'em! □



### SPRING FLING REMINDER!

We'll see you at the GTRI Spring Fling on Thursday, June 6, 11 a.m. to 2 p.m. Rain date is Tuesday, June 11. The picnic again will be held at the Burger Bowl, at Hemphill and Eighth Street. Come and enjoy food, fellowship, games, and prizes! Look for your invitation soon!



**Focus  
on  
Folks**

## Jerry Eaves retires

By Maggi Harrison

**M**ore than 90 people attended the recent retirement party held at CCRF for Jerry Eaves, who is retiring after 30 years of service to Georgia Tech. Dr. Ed Reedy, as MC, recounted several of Jerry's many contributions to radar research at Tech over this time, and Nick Currie presented a slide show and movie depicting some 'highlights' from Jerry's career.

After Dr. Donald Grace presented Jerry with an official retirement plaque, Neal Alexander read a humorous diploma. The diploma came with an on/off switch and a knob attached, as Jerry always maintained that a radar wasn't a radar without these high-tech parts! Bob Trebits gave Jerry a number of gifts from all his co-workers.

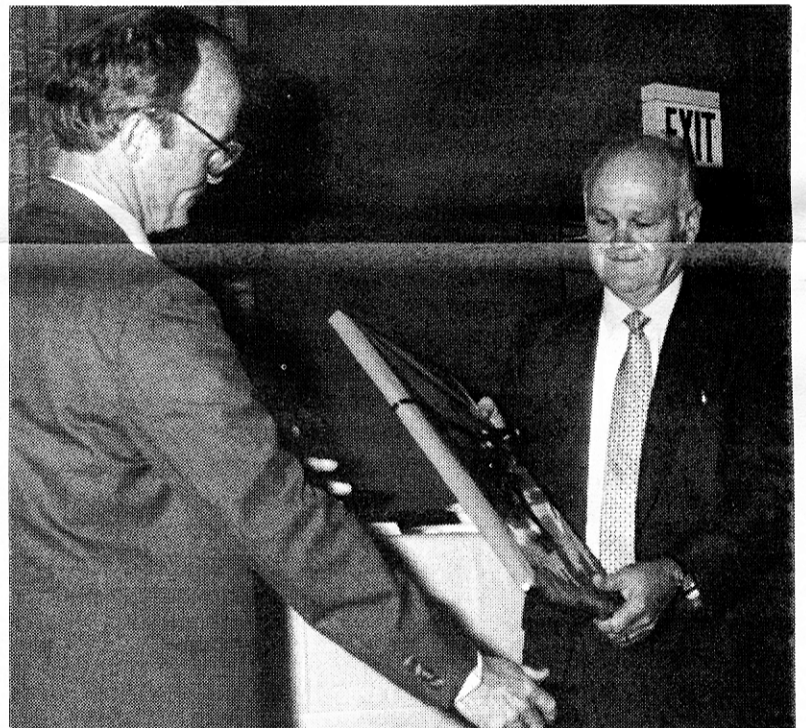
Jerry was among a group who started working in an area where the Tech Library now stands. They were the foundation of Georgia Tech's radar research and are responsible for its early and continuing development, right up to the present time. Jerry's work and knowledge have played a major role in the national and international recognition of Georgia Tech's high-quality radar expertise. The "Principles of Modern Radar" short course, under Jerry's guidance, has proved to be the best-attended and highest money-earning Continuing Education course that Tech has offered. This short course has been going for 20 years and has generated a highly acclaimed and important book on radar. The book, also entitled *The Principles of Modern Radar* (coauthored by E.K. Reedy and J.L. Eaves), has greatly enhanced Georgia Tech's reputation as a leading radar entity.

Most recently, Jerry served as Associate Laboratory Director in the former Radar and Instrumentation Laboratory (RAIL). He will continue in an hourly as needed capacity to assist with various short courses.

We thank Jerry for his untiring dedication and loyalty to Georgia Tech. He is one of those employees who will truly be missed. □



*These photos taken at Jerry Eaves's retirement luncheon show (from top to bottom) Neal Alexander awarding Jerry a humorous diploma; Jerry displaying a plaque showing the cover of the book, Principles of Modern Radar, with writeups of Ed Reedy and Jerry, who were the coauthors; GTRI Director Don Grace presenting Jerry with his retirement plaque; and Ed Reedy presenting the gift plaque to Jerry. (Photo with Dr. Grace by Brian Hudson—others by Anita Edwards)*



## Bob Collier retires

**R**obert E. Collier, senior research scientist in the Office of the Director, retired at the end of March after 23 years of service to GTRI. He was honored at an OOD luncheon March 25.

Bob came to the Economic Development Laboratory in August 1966 after retiring from a 26-year career in the U.S. Marine Corps, where he rose to the rank of full colonel. His initial assignment at EDL was to provide management and technical assistance to small business and industrial firms located in economically depressed counties in Georgia. He soon found his niche in the training field, first heading EDL's Economic Development Training Section, then leaving Georgia Tech for 18 months in 1971-72 to direct training services at Spindletop Research in Kentucky. He returned to EDL in 1972 and in 1974 was named head of its Education and Training

Branch, where he was responsible for the development and conduct of training activities, including international programs.

In 1981, Bob was tapped to become management training coordinator for the Office of the Director, GTRI, a post which he admirably filled for the past 10 years. He developed three project management and contract development courses and a proposal preparation workshop for GTRI's research professionals; he conducted 52 sessions of these educational events, which were attended by nearly 1,250 GTRI/Georgia Tech research faculty members.

Bob's many friends in GTRI will miss his infinite store of corny jokes and his ear to the grapevine, but most of all, they'll miss his "elder statesman" insight into the ups and downs of organizational life. □



*Bob Collier (left) shakes hands with GTRI Director Don Grace, who has just presented him with a plaque honoring his 23 years of service to GTRI. Bob retired March 29. (Photo by Joe Schwartz)*



# Focus on Folks

**Gene Greneker has been elected a Senior Member of the Institute of Electrical and Electronics Engineers.**

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## Professional Activities

### Advanced Technology Lab

**Istvan Nogradi** presented an invited paper entitled "Improving the Reliability and Maintainability of Older Radar Transmitters" at the 1991 High Voltage Workshop in Port Heuneme (CA). Nogradi has presented nine papers at various national and international conferences in the past year and a half, including seven invited papers. During the modulator portion of this conference, his papers were referenced by four other authors. This classified conference was sponsored by the IEEE Advisory Group on Electron Devices and the Department of Defense. It took place at NSWSES March 19-22.

### Aerospace Science & Technology Lab

Dr. **Krish Ahuja** has received a joint appointment as a full professor in the School of Aerospace Engineering.

### Computer Science & Information Technology Lab

Associate Lab Director **Janet Leininger** participated in the filming of a marketing video for Morris Brown Research Institute. In the video, she discussed the association between GTRI and MBRI in working on the CTAPS and CSS projects for the U.S. Air Force. The video also is planned to include statements from Andrew Young and Mayor Maynard Jackson.

### Countermeasures Development Lab

**John Bond** was a judge for the 1991 Invent America competition held for Gwinnett County schools. He judged fifth grade entries. The teachers in charge of this event expressed an interest in Georgia Tech being a resource for the students, who are required to research the uniqueness of their inventions.

### Economic Development Lab

An article by **Mike Brown**, "Establish an Employee Energy-Awareness Program," appeared in the March issue of *Chemical Engineering Progress*.

EDL's Faculty Liaison Program, designed to facilitate and increase engineering faculty participation in the regional offices' technical assistance efforts (see October 1990 GTRI CONNECTOR), is expanding to include the other Georgia Tech colleges.

Macon Regional Office Director **George Lee** has been selected president of the Mentors Project of Bibb County. An outgrowth of his involvement with the Greater Macon Chamber of Commerce over the past two years, the project is expected to match 300 adults with tenth graders in the county's four public high schools. The adults serve as role models and help the students reach full potential and graduate. It has received more than \$32,000 of support from area industry, service organizations, and the state.

**George Lee** also has received his MBA from Georgia College.

### Environmental Science & Technology Lab

The Society for Technical Communication gave an Award of Excellence to **Nancy Davis** and **Rae Adams** for "The MET Program for Supervisors" and an Award of Merit to **Carrie Stikeleather** for "Food Industry Environmental Conference—1990 brochure."

### Modeling & Analysis Lab

**Chris Barnes** coauthored "Residual VQ with State Prediction: A New Method for Image Coding" with Faouzi Kossentini and Prof. Mark Smith. The paper was presented at the SPIE/SPSE Symposium on Electronic Imaging, held February 24-March 1 in San Jose (CA). At the 1991 Conference on Information Sciences and Systems, held at Johns Hopkins University, March 20-22, Barnes presented a paper entitled "Two-Dimensional Signal Constellations for Non-Linear Coset Codes Based on Multistage Codes."

### Physical Sciences Lab

**Paul Wine** coauthored with scientists from Ford Motor Company a paper entitled "A Competitive Kinetics Study of the Reaction of Cl with CS<sub>2</sub> in Air" which appeared in the January 4 issue of *Chemical Physics Letters*.

A paper by **Tony Hynes** and **Paul Wine** entitled "Kinetics and Mechanism of the Reaction of Hydroxyl Radicals with Acetonitrile under Atmospheric Conditions" appeared in the February 7 issue of *The Journal of Physical Chemistry*.

Dr. Wine also presented an invited talk, "Gas Phase Sulfur Chemistry in the Marine Atmosphere," at a workshop on Transformation Dynamics of Marine Aerosols, sponsored by the Office of Naval Research, which was held February 18-20 at the University of Rhode Island.

**Chris Summers** gave an invited talk on "Metalorganic Molecular Beam Epitaxy of II-VI Materials" at the International Congress on Optical Sciences and Engineering, held April 11-13 at The Hague, The Netherlands.

### Radar & Instrumentation Development Lab

**Gene Greneker** has been elected a Senior Member of the Institute of Electrical and Electronics Engineers.

**Michael Brinkmann** has received his master's in Electrical Engineering from Georgia Tech.

### Service Groups

**Bob Lang**, Director of Research Security, and **Dan Papp**, Director of the School of International Affairs, made a presentation on "Terrorism: A Micro and Macro View Affecting Georgia Tech" to the local chapter of the American Society for Industrial Security.

Congratulations to **Joe Schwartz**, Research Communications, who received his Master of Science in Management from Georgia Tech in March. □

## Personnel News

### Advanced Technology Lab

**John E. Fain** terminated his employment April 19.

### Economic Development Lab

**Frank Mewborn** has been selected as the new director of the Madison Regional Office. **Charles Estes** will assume Mewborn's former duties of managing the TAAC program while continuing as associate lab director.

**David Fahrion** of the Augusta Regional Office resigned in early April.

### Electromagnetic Science & Technology Lab

Lab Director **Milton Cram** and **Tanya Robbins** have resigned effective April 30.

### Radar & Instrumentation Development Lab

Welcome to **Pat N. Rose**, senior secretary for the Experimental Branch.

RE II **John Andrews** has transferred from MAL to RIDL.

New co-ops are **David Aylesworth** and **Damon Gallaty**.

**Kevin Adams** and **David Galloway** have resigned.

### Threat Systems Development Lab

**Troy L. Jarvis** joined TSDL April 11 as a research technologist I. TSDL also welcomed co-ops **Bruce K. Townsend**, **Adam R. Bare**, and **Nathan L. Turner**, **GRA Thomas W. Egolf**, and technical assistant **Jonna K. Chisholm**.

SRE **Leon Stillman** will retire May 31. □

## Personal Notes

### Wedding Bells

**Chuck Catlett** (EDL) was married April 27.

**Jim Scheer** (RIDL) became a father-in-law Easter weekend, when his son, Rob, got married.

### Cradle Roll

**Susan Proctor** (EDL) and husband Phil are parents of twins, Susanna and Phillip, Jr., born March 18.

**Scott** (NET TECH) and **Tana** (TSDL) **Parker** are the proud parents of a baby daughter, Jordan Alexandra, born April 5.

The first new arrival in the 1991 CSITL baby boom was born to **Anne Gilchrist** and her husband, Jonathan Epstein. Rachel Marie was born March 22.

Former RIDL employees **Bruce** and **Julie Huitt** are proud parents of Nathanael Mathews, born March 9.

**Jill Bach** (RSAL) recently had a baby girl, Brianna Michelle.

### Our Sympathy

Sympathy is extended to **Christie Belcher** (MAL) and **Lamar Gostin** (RIDL), who lost their fathers, to **Ted Lane** (RIDL), who lost his sister, and to **Matt Homiller** (RIDL), who lost his grandmother.

### Sports News

The B-League intramural basketball team the 69ers (ALR-69 RWR), made up of **Walter Addison**, **Kim Cole**, **Lou Fertig**, **Rob Kossler**, **Russell Leath**, **Tom Pratt**, **Rob Raboud**, and **Ben Slocumb**, came in second place at season's end with a record of 10-1. The championship game took place March 11 at SAC. They lost a heartbreaking game (52-45) to a team they had previously beaten by one point in the regular season. The semi-final game was a heartstopper. The team they were up against included some of Georgia Tech's football players, such as Ken Swilling. The 69ers were down by two and had the ball with one second left—Rob Kossler threw a "Hail Mary" toward their basket from near the foul line on the opposite side of the court and it went in to win the game by one point! The 69ers are an interlaboratory team from CAL, CMDL and ESML.

**Sherri Odom** (MATDL) has done it again! This time she won the Atlanta Women's 8K Race at Piedmont Park April 6, competing with some 450 runners. □