

The GTRI Connector

Did You Know:

One-fourth of the 206 bones in the human body are located in the feet.

The banana cannot reproduce itself. It can be propagated only by the hand of man. Further, the banana is not a tree, it is an herb, the largest known of all plants without a woody stem or solid trunk.

--from *2201 Fascinating Facts* by David Louis

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Solar Cells to Noise Control: FY 95 Internal Research Projects Funded

By Lea McLees, RCT

Researchers investigating low-cost solar cells, noise control in smart walls and windows, a Russian beam-steering computer and digital beam-forming algorithms have won internal research funding for FY 95.

The selection of the four projects was announced in September by Director Richard Truly after receiving recommendations from the GTRI Fellows. The four were among 37 proposals submitted for consideration. In addition, five multi-year projects were reviewed and granted continued funding.

GTRI's Internal Research Program is an element in meeting GTRI's strategic objective to encourage and support new research efforts in targeted areas benefiting society. The newly funded proposals are:

• **Development of a Beam Steering Control Unit for Low-Cost Russian Phased Array Antenna, \$60,000:** Rickey Cotton and Martha Willis of SEAL will develop a prototype driver for a beam steering computer to be used with a Russian-built demonstration phased array antenna. The array is based on the technology used in the SA-12 surface to air missile system. The antenna's radio frequency technology is excellent and low-cost, but the computer, which is as big as the antenna itself, is obsolete in comparison to equivalent U.S. technology. The computer could be faster, more efficient and reliable, and four times smaller. The hybrid system may find commercial applications and is an excellent example of defense conversion and dual use technology.

Continued on page 5



At our deadline, members of GTRI's newly selected External Advisory Council were meeting with GTRI leaders, lab directors and researchers. They spent October 13 and 14 learning about the organization, touring labs and seeing GTRI research in progress. The council will use this background knowledge to advise GTRI on strategies and programs which will lead to fulfillment of our goals. See next month's CONNECTOR for an introduction to all the council members. (Photo by Lea McLees)

GTRI Records Second-Best Awards Month in Its History

GTRI researchers set a record during September, bringing in approximately \$21 million in grants and contracts over the month.

That makes September 1994 the second-best awards month in history for GTRI, and the best September ever.

"This awards month is something that everyone in GTRI can be proud of — I certainly am!" said Director Richard Truly.

The September awards figure was close to that of GTRI's best awards month ever: \$26.9 million awarded in May 1986.

The largest single September award, \$5.43 million, went to ELSYS. This ELSYS award combined with five other major awards made up 59 percent of total September dollars. ELSYS brought in another of the top awards; SEAL was responsible for two; and EOEML and ITL each brought in one. Four of the six largest awards are sponsored by the U.S. Air Force, one is sponsored by the U.S. Department of Labor, and one is sponsored by the U.S. Army.

In general, September and October tend to be GTRI's two largest awards months each year.

Observed & Noted

You can read the final installment of "Meet the Research Security Department" this month. *Meet Deborah Thomas and Jason Reynolds on page 2.*

We've combined selected awards for August and September this month. *See page 2 for an*

extensive list.

This month's Olympic questions address parking for all employees, and provisions for GTRI co-op students who will be working here during the 1996 games. *See page 3 for answers and Sarah Andrews' Olympics facts column.*

Robert Mobley stays busy in GTRI's Warner Robins Federal Field Office. *Turn to page 3 to find out what Mobley does to assist researchers.*

Plans for the CO-MEAS '95 Conference have been an-

nounced. *To learn what will be covered and how to get more information, turn to page 4.*

A software tool developed at GTRI could help reduce the cost of personal communication systems. *The work, explained on page 4, is being conducted*

in ITL.

GTRI has launched a Quality Improvement Library on campus. Information is on page 5, and a list of the publications included is on page 6.

Our researchers

have a new research librarian to call on for assistance. *See page 7 for information on how Bette Finn can help you.*

Professional activities and personal news fill page 8. *Don't forget to read about GTRI's newest employees on page 7, too.*

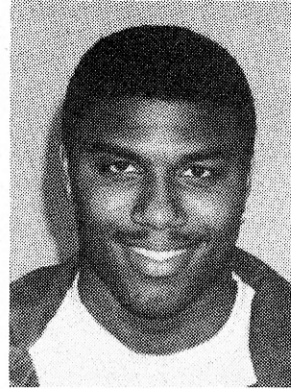
**News
&
Notes**



Deborah Thomas

Meet the Research Security Department

Deborah Thomas
Manager of the Technical Information Center (TIC) and supervisor of RSD's Operations Section, Deborah joined Georgia Tech in 1979. Today she oversees TIC's work in document control, personnel security questionnaires, visit control and Defense Technical Information Center ordering. Deborah, who holds a master's degree in business education from Georgia State University,



Jason Reynolds

says the best part of her job is finding "just the right document that an engineer needs." Her "hobby" is her four children: a 23-year-old MIT grad, an 18-year-old Oxford (Emory) student, a 16-year-old dancer and an 8-year-old sports enthusiast.

Jason Reynolds
A student assistant in his second year with RSD, Jason's basic job is to make badges and do front-desk duty at GTRI facilities. He and another student assistant manage the database that monitors individuals' security statuses, and they perform similar work keeping track of

documents. A fourth-year student in textile engineering, Jason says his job-schedule flexibility helps him integrate work and school. In his off hours, weightlifting and basketball keep him busy, as do both community work and social life at his fraternity, Omega Psi Phi.

Fellows Want Your Input

The GTRI Fellows Council was formed in 1993, partly to provide recommendations to the GTRI director from the research community without passing through the management chain. Continued comments and specific suggestions for improving the research enterprise at GTRI are invited. You may contact Krish Ahuja (AERO) 528-7054, Larry Corey (SEAL) 528-7156, D.C. Flowers (ELSYS) 894-7195, Bill Rhodes (EOEML) 894-2929, or Chris Summers (EOEML) 894-3420.

SELECTED AUGUST/SEPTEMBER 1994 AWARDS

Title	PI/Laboratory	Sponsor	Funded Amount
Identification of Analytical Procedures	Blankenship, S. (ELSYS)	VRC Corporation	\$ 47,287
ALE-47 Processor Support Station	Harrington, A. (ELSYS)	Air Force	1,100,000
New Material Structures of High Definition Displays	Summers, C. (EOEML)	Army	181,791
Maintenance of EO/IR Surface-to-Air Missile System High Fidelity Simulator	Adams, J. (EOEML)	Dynetics Inc.	46,642
Indoor Air Quality, GETC 95-301 - GIT	Bayer, C. (EOEML)	University of Georgia	469,154
Imaging Tracker Countermeasures	Mullikin, A. (EOEML)	Navy	155,000
Southwest Border States Anti-Drug Information System - Phase I	Hilderbrand, T. (ITL)	Logicon Eagle Technology	407,745
Automated Mix Design & Testing System	Huggins, D. (ITL)	Ga. Dept. of Transportation	79,669
High Data Rate Local Area Networking	Witten, M. (ITL)	Army	487,902
Data Transfer and Translation Module	Coleman, J. (ITL)	Army	462,843
Workstation Baseline Software Support	Hilderbrand, T. (ITL)	Army	150,357
AAA/Missile Target Tracking Radar Transmitter Fabrication	Toph, E. (SDL)	Army	498,478
Electromagnetic Environmental Generating System	Clark, D. (SEAL)	Navy	200,000
Electronic Systems FME/FSA	Cotton, R. (SEAL)	Navy	300,000
Percolating Systems - Phase II	Moore, R. (STL)	U.S. Dept. of Defense	399,998
Aeromechanics Technology	Englar, R. (AERO)	Air Force	104,748
MH-60G Structural Integrity Modifications	Crawford, C. (AERO)	Air Force	494,000
MH-53J Integrated Electronic Warfare System Integrated Support Station	Strike, T. (ELSYS)	Air Force	2,350,000
EWMV Foreign Comparative Test	Tibbitts, T. (ELSYS)	Air Force	300,000
Integrated Support Systems for WR/LNTEA	Ingle, R. (ELSYS)	Air Force	5,435,334
Tactical Threat Engagement & Countermeasures Simulation System	Mullikin, A. (EOEML)	Army	545,000
Laboratory Studies of Tropospheric Sulfur Chemistry	Wine, P. (EOEML)	National Science Foundation	174,000
FY 95 7(C)(1) Consultation Cooperative Agreement	Middendorf, P. (EOEML)	U.S. Dept. of Labor	869,356
Patriot Radar Environmental Test Tool (PRETT)	Frost, M. (HRO)	Army	149,784
RF Propagation Effects & Acts Satellite Channel Characterization	Howard, D. (ITL)	NASA	129,834
Opossum Magic Analysis	Wilson, B. (ITL)	Army	200,000
Counter Drug Cartographic Analysis System	Bennett, E. (ITL)	Army	200,560
Waveform Simulator Operations Support	Kerr, R. (SDL)	Lincoln Laboratory	300,000
Radar Simulator, Seeker & Instrumentation Program (Phased Array Antenna Eval.)	Muzio, A. (SDL)	Army	280,000
XM-43S & XM-15S Test Support	Muzio, A. (SDL)	Army	424,794
Infrared Countermeasure Simulation System (IRCMSS) Upgrade	Lamm, D. (SEAL)	Army	405,885
ECCM Flight Test Demo Scope Increase	Morris, G. (SEAL)	Air Force	1,112,000
ECCM Analysis Scope Increase	Morris, G. (SEAL)	Air Force	1,465,000
Joint Stars EWVA	Cochrane, W. (SEAL)	Army	407,207
ALQ-135 Bands 1 & 2 Technology Insertion Study	Sjoberg, E. (SEAL)	Air Force	220,695
Radar ECCM Flight Test Demonstration and Vulnerability Assessment Program	Morris, G. (SEAL)	Air Force	490,000
Photonic Bandgap Structures	Kesler, M. (STL)	U.S. Dept. of Defense	274,975
AFDTC Electronic Combat Test Improvement Center	McDougal, G. (ELSYS)	Air Force	2,076,827
EQ Techniques Analysis/RF	Lilly, L. (ELSYS)	Air Force	934,648

Countdown to 1996

Will there will be any parking on campus during the 1996 Olympics? If not, will there be parking close by for GTRI employees?

There will be no parking at all on campus during the Olympics. In fact, the entire campus — bounded by 10th Street on the north, Tech Parkway/Northside Drive on the west, the Interstate Connector on the east and North Avenue on the south side — will be inside the Olympic Village and a security fence will surround the whole area.

However, there will be ACOG-sponsored

“satellite parking lots” around campus for GTRI employees and others. These lots will be served by free shuttle service that will ferry GTRI employees to campus and back. It isn't yet determined where these satellite lots will be located.

Will GTRI co-op students have difficulty getting onto campus during Summer Quarter 1996? Will parking privileges extend to co-op students, who may have to live far from campus because of housing demand and high rents? And will student housing be available for co-op students and others during the Olympics?

Co-op students will be regarded as GTRI

employees and will have access to their GTRI work sites. They will receive the ID required for the Research Zone and will have the same satellite-parking lot privileges.

The Research Zone will include Centennial Research Building, Electronics Research Building, Baker Building and O'Keefe Building. GTRI personnel working in the Coliseum Annex will be in a sports Venue Zone (boxing) and will have different security identification from GTRI people working in the Research Zone.

There will be no on-campus student housing for co-op students or other students.

Source: William A. Miller, Director of Olympic Planning

1996 Future Facts

- The MARTA rail system is the integral part of transportation for the Olympics. Up to 2,000 additional buses will provide transportation for the expected 150,000 additional people a day.
- Atlanta has more than 55,500 hotel rooms available within a 45-minute radius of downtown Atlanta and another 20,000 within a 90-mile radius. Reserva-

tions for accommodations in Atlanta, Athens, Columbus, Ocoee River locations and in Savannah will be coordinated by the Atlanta Committee for the Olympic Games. Visitors will be able to purchase airline tickets, hotel rooms, and event tickets all in one package. Please emphasize to friends and family that the most important thing is to deal with a reputable travel agency in their area.

- The Ocoee River is where the

whitewater canoeing will be held. The event requires a Class “4” rapid, which currently does not exist on the Ocoee. A group of engineers designed a course with Class “4” rapids. Boulders must be moved into the river to implement the design. This area will remain after the Olympics and the public will have the opportunity to canoe the course.

— from Sarah Andrews (ELSYS)

Warner Robins Field Office Runs Lean, Stays Busy

by Rick Robinson, RCT

Each of the GTRI Federal Field Offices is unique, but one mid-Georgia location is truly singular — a one-person shop with a client list that amounts to a sizeable chunk of GTRI's business.

It's the Warner Robins Federal Field Office, headquarters for Robert L. Mobley Jr. On Mobley's shoulders falls considerable responsibility: GTRI received \$11 million in FY 94 contracts with divisions of Robins Air Force Base, out of \$78.5 million for all GTRI contracts in FY 94.

“Bob is the local go-to guy, a behind-the-scenes, get-it-done kind of person,” says SEAL Director Bob Trebits. “He's well known to those of us who want to do business with Robins Air Force Base.”

Mobley unassumingly calls himself “a liaison type,” noting that “when you're a one-man office you do a little bit of everything.” His duty list ranges from setting up meetings to dealing with clearance issues to ferrying vital items between main campus and Warner Robins.

“My primary purpose is to make sure the people at Warner Robins are happy with the work they're getting from GTRI,” Mobley says. “We probably have over 50 separate tasks going on here at any one time. I try to solve any problems before they get started.”

The role seems a natural for Mobley. He retired in 1983 as an Air Force major from Robins Air Logistics Center and has been working for GTRI in Warner Robins ever since. His familiarity with the Air Force and the base con-

tinues to aid GTRI in a variety of ways, not the least of which is keeping tabs on any Robins personnel changes.

Robins AFB's largest unit is its Air Logistics Center, a repair, upgrade and maintenance depot for avionics equipment. The base also is a refurbishing depot for the F-15, home to an Air Force Special Forces unit and headquarters for the Air Force Reserves. A number of GTRI labs — including ELSYS, SEAL, EOEMI and AERO — work extensively with one or more of the divisions at Robins.

The Warner Robins Field Office runs lean. Mobley has his office in a Georgia Tech Advanced Technology Development Center (ATDC) incubator facility located several miles from Robins AFB. He even shares a secretary with ATDC.

One reason the Warner Robins field office can run so efficiently is its relative proximity to Tech's main campus. Day trips are able to resolve most issues that can't be settled by phone or fax, says SEAL Director Trebits.

ELSYS Director Larry Holland notes that besides Mobley's role assisting with both ongoing research programs and contract development, “he sometimes participates technically in our projects.”

That's because Mobley is also an engineer, with Air Force experience in missile/space, TEMPEST and electronic warfare. He earned his bachelor's and master's degrees in electrical engineering from Arizona State University after enlisting in the Air Force, after which he received a commission. While stationed at Robins, he spent four years doing electronic warfare work.

“I do some technical work when it's feasible to do,” Mobley says. “Or sometimes it's a matter of just watching it or holding hands down here — I do that as well.”



Talk Presented Recently? Procedure Being Updated? Question to Ask? Baby to Announce?

You can share your professional achievements, departmental news and personal notes with your colleagues via THE CONNECTOR. Here's how to reach us:

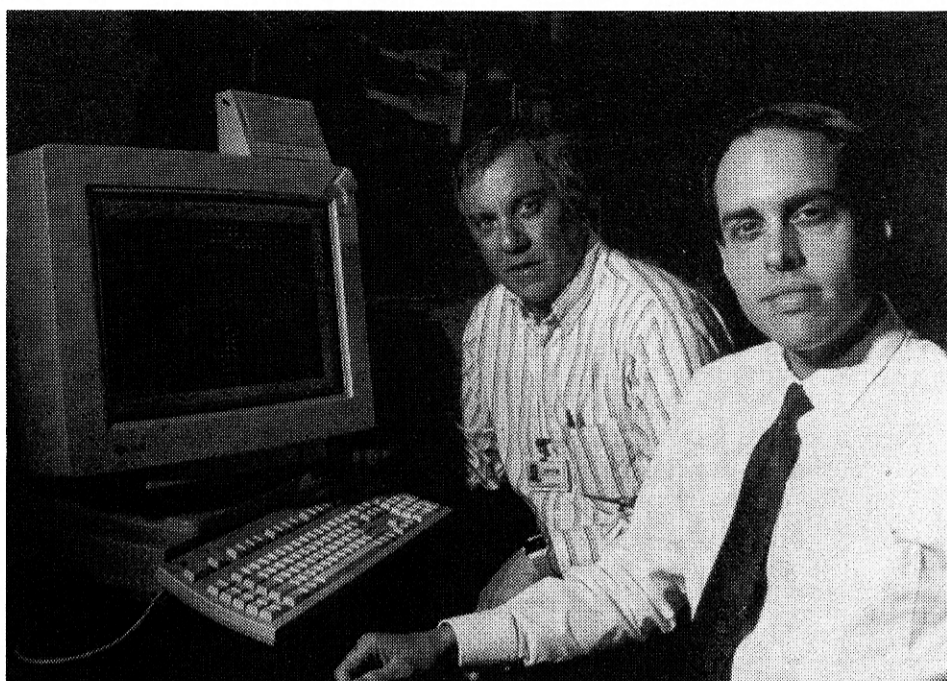
- Contact any of the associate editors listed in the bottom left corner of page 8. They will forward information to RCT for you.
- Drop written information in the campus mail addressed to RCT/GTRI, Rm. 223 CRB, MC 0828.
- Send information electronically to lea.mclees@gtri.gatech.edu.
- Call 853-9079 or 894-3444 to share your news.
- Stop by Rm. 223 CRB and tell us in person.

A couple of items we're currently on the lookout for:

- Employees' work-related questions about the Olympics, and general questions about how to get things done, such as how to dispose of old software. We'll find the answers and include them in upcoming issues.
- Photos of your office's or lab's upcoming Thanksgiving or holiday celebrations. We will be glad to shoot a picture for a future issue, or include one that you send us.

Focus on Research

Les Pickering and Eric Barnhart have led an effort to develop an engineering tool for optimizing the design of wireless communications systems within buildings. (Photo by Gary Meek)



Software Tool Could Help Lower Cost of Personal Communication Systems Installation

A new software package developed to predict how radio waves transmit and are reflected inside structures could help reduce the cost of installing personal communications systems (PCS) in buildings. GTRI engineers developed the patent-pending cell engineering tool (CET) through an applied research program sponsored by Hitachi Telecom USA, Inc.

Based on extensive experimental measurements in a wide range of buildings, the CET incorporates several distinct analytical methods into a single software package. By describing the geometric configuration of a building's walls, ceilings, windows and doors, telecommunications engineers can use the tool to "make some educated judgments" about where to locate PCS base stations. The ability to quickly choose the best locations will minimize the number of stations needed for service in a building, reducing the system's cost.

"It's a very difficult problem because so many variables are involved," said Eric Barnhart (ITL). "But we think it's an important problem to solve, because if we can come up with an adequate solution, we can build a tool that will allow someone to deploy a wireless indoor network at minimal capital cost."

Personal communications systems are being developed to help employees in large organizations stay in better contact with each other by linking entire buildings in wireless private branch exchanges. These systems will give each user a unique number for a pocket telephone useable anywhere in a building. Like a cellular system, PCS networks allow users with portable telephones to move from cell to cell, staying in wireless contact with other PCS and telephone subscribers. But while a cellular system's cells typically cover a diameter of four to eight miles, PCS "microcells" are typically only a few hundred meters wide.

The GTRI research team based its predictive tool on experimental measurements taken over the past few years in metropolitan

Atlanta. Part of this work was carried out in an earlier project sponsored by BellSouth to characterize indoor propagation of PCS. The researchers first applied for and received an experimental license from the Federal Communications Commission (FCC) to characterize how PCS systems might work when deployed. They focused on the band from 1850 to 2200 megahertz, the area of the spectrum the FCC assigned to personal communications services.

The researchers measured and characterized radio signal propagation in high-rise office structures, several Georgia Tech buildings, a few warehouses in the Atlanta suburb of Norcross, and the Inforum building in downtown Atlanta. These measurements involved transmission of a very simple signal without modulation.

The researchers characterized the ability to receive the signal at different frequencies, antenna polarizations, and physical locations. They used this information to develop a baseline information set that could be used to predict how a given signalling system would work. In this way, they could choose between different signalling systems and also suggest where base stations should be located in a building.

"We're encouraged with the results," Barnhart added. "What we hope to do is define the classes of problems for which the tool is valid, and have that subclass represent a large enough percentage of the possible cases that we would have a valuable tool. We think we're on the threshold of that."

A startup company that would produce the software product for use by PCS designers is being considered.

The cell engineering tool is another example of how defense technology can be applied to the commercial sector. ITL's Communications and Networking Division began developing radio frequency communications expertise in the 1960s, and until the mid-1980s the group applied its skills primarily to military problems, with an occasional project in the commercial arena. With the downturn in defense research, the division found the wireless commercial market starting to percolate. "We found that we could apply a skill set developed literally over decades to a new business area that was crying out for expertise in the areas in which we happened to be well-positioned," he said.

CO-MEAS '95 Coming Next Spring

by Jackie Nemeth, ECE

The Second Topical Symposium on Combined Optical and Microwave Earth and Atmosphere Sensing (CO-MEAS) will be held April 3-6, 1995 in Atlanta. The symposium is sponsored by the IEEE Geoscience and Remote Sensing Society, Lasers and Electro-optics Society, and Microwave Theory and Techniques Society.

CO-MEAS focuses on topics related to terrestrial atmosphere and ocean sensing techniques involving optical (infrared, visible, and ultraviolet) and microwave (including millimeter and submillimeter wave) frequencies. The symposium will address remote sensing hardware, retrieval methodology, and challenges associated with combined optical and microwave experiments. Special emphasis will be given to techniques that use both optical and microwave portions of the spectrum to obtain information not otherwise available using either one of these alone.

Seven focused technical sessions will be convened covering the following topics:

- Land Surface Processes and Biological Interactions
- Ocean Surface Measurements and Air-Sea Interactions
- Remote Sensing of Tropospheric Clouds and Water Vapor
- Atmospheric Trace Species Sensing
- Temperature, Wind Field, and Turbulence Sensing
- Modeling and Inversion of Multiwavelength Multisensor Data
- Development in Optical and Microwave Systems

CO-MEAS was proposed in 1991 and first held March 22-25, 1993 in Albuquerque, N.M. The symposium attracted 115 attendees, with representation from industry, government and academia. The plenary session for CO-MEAS '95 will feature two eminent speakers who will present overviews of the state of optical and microwave remote sensing and the synergism available through the use of combined techniques. Each of the seven focused sessions will be convened by two distinguished individuals in the areas of optical and/or microwave earth remote sensing or associated system hardware. A poster session is also being planned.

For more information about CO-MEAS '95 you may contact Albin Gasiewski (Electrical and Computer Engineering) at 894-2934, or Gary Gimmestad (EOEML) 894-3419.

Georgia Tech
RESEARCH INSTITUTE

Internal

From page 1

ogy at Georgia Tech.

•**Adaptive Intra-space and Inter-space Array Processing, \$29,978:** Jeff Holder (SEAL) plans to demonstrate the real-world utility of digital beam forming (DBF) algorithms, developed at Georgia Tech, in supporting wideband radar operation. This work will address the two challenges that constrain sensor array processing applications — an algorithmic problem and a hardware problem. The project also should strengthen GTRI's leadership in a proposed \$4 million DBF research and development program to be conducted with the United Kingdom, and enhance GTRI's presence in an active military/commercial research area.

•**High Efficiency Solar Cells Utilizing Large Grained Polysilicon and Titanium Diboride Films Prepared by Chemical Vapor Deposition, \$64,993:** Jack Lackey and Bruce Beckloff of EOEML and Ajeet Rohatgi (Electrical/Computer Engineering) are working on fabrication of a low-cost efficient solar cell using large grained polysilicon deposited onto a thin film of titanium diboride. Both materials would be prepared using chemical vapor deposition. This approach holds many potential advantages, including reduced silicon consumption, less expensive substrate materials, high cell performance and longer-lasting solar cells. Using novel materials processing concepts and rigorous cell designs such as those described is the only way to produce low-cost solar cells with efficiencies exceeding 20 percent. If the cost of high efficiency solar cells is reduced to about \$2 per watt from its current \$4 per watt, increased applications of solar power could become feasible.

•**Active Vibration and Noise Control through Smart Windows and Walls in Homes, \$25,000:** Researcher Jeff Hsu and AERO colleagues will explore the use of active noise control in homes to reduce indoor noise from nearby busy airports and highways. Active noise control involves creating a sound wave that is opposite in phase but the same

amplitude as the offending sound. This technique never has been applied to homes. The researchers propose to mount transducers on walls and windows; the transducers would create the correct vibration patterns needed to cancel out noise from outdoors. This work could be applied to trains and ships, theaters, hospitals, trucks, automobiles, plane cockpits, classrooms, and more.

Selection Process

Each Fellow was assigned a group of proposals on similar subjects to review, based on his experience in that particular research area. Each then asked two to four GTRI engineers with expertise in the proposal topics, but no involvement in submitting the proposals, to help review them.

The teams rated proposals based on innovation, probability of success, contributions to the GTRI Strategic Plan, contract development potential and cost/benefit. The two proposals with the highest scores in each of the six research areas were forwarded to the entire Fellows Council for further consideration. Some of the 12 finalists were asked to make presentations. The 12 were ranked based on their scores, and recommendations were made to Truly, who funded them based on money available for internal research.

Multi-Year Projects Continue

Work on these multi-year internal research projects is ongoing:

•**Laser Generation and Sensing of Ultrasound for Non-Destructive Testing, \$23,000 FY94, \$14,000 FY95:** SEAL's Gary Caille, Michael Gray and John Doane;

•**FutureCar Test Bed Task Two, \$23,000 FY94, \$38,000 FY95, \$15,000 FY96:** AERO's Rob Michelson;

•**Intelligent Advanced Traffic Management System Architecture, \$59,000 FY94, \$40,000 FY95:** IITL's John Gilmore and Stefan Roth, Mike Meyer (Civil Engineering);

•**Neural Feedback for Computational Vision, \$36,000 FY94, \$60,000 FY95, \$24,000 FY96:** EOEML's Ted Doll, David Schmieder and Bill Rhodes, Electrical/Computer Engineering's Stephen DeWeerth, and

Psychology's Elizabeth Davis.

•**Non-Doppler Remote Sensing Technique for 3-D Wind Field Mapping, \$59,000 FY 94, \$99,000 FY 95, \$40,000 FY 96:** Mikhail Belen'kii, Gary Gimmestad.

Tips on Winning Internal Research Funding

Selection of internal research projects to be funded during FY 96 will begin early next year — look for a request for proposals sometime in January 1995. The Fellows plan to have a list of finalists ready for Director Richard Truly by mid-June.

In the meantime, here are some tips from the GTRI Fellows Council on how to make your internal research proposal a winner:

•**Start thinking now about the project you'd like to propose.** Keep in mind that about 50 percent of the funds are for addressing the emerging technological needs of society.

•**Talk with someone on the Fellows Council** about your ideas and how to make them salable — they are glad to help and share their experience. The Fellows are Krish Ahuja (AERO), 528-7054; Larry Corey (SEAL), 528-7156; D.C. Flowers (ELSYS), 894-7195; Bill Rhodes (EOEML), 894-2929; or Chris Summers (EOEML), 894-3420.

•**Include both junior and senior researchers on your team.**

•**Write concisely** — technical proposal should be five pages maximum. (That does not include the lab director's cover sheet and the cost proposal page.)

•**Be prepared to present your research in person**, if necessary, with uncluttered, readable visual aids.

Focus on Research

Some GTRI employees were members of the Georgia Tech team that designed the trio of robots which won the Third Annual International Mobile Robot Competition in Seattle recently. Front row, left to right, are the robots Ganymede, Io and Callisto. Their task was to clean up an office littered with trash. Second row: The College of Computing's (COC) Juan Carlos Santamaria and Gary Boon, and Sheree Collins (GTRI/MAPS) — Sheree helped the team during the competition. Third row: Doug MacKenzie (CoC), Tucker Balch (CoC), and Tom Collins (GTRI/ELSYS). Not pictured is Dave Huggins (GTRI/IITL). (Photo courtesy Tom Collins)

GTRI Launches Quality-Improvement Library At Tech

As part of an ongoing commitment to the Continuous Quality Improvement (CQI) Concept, GTRI has established a collection of quality-related materials in Georgia Tech's Price Gilbert Memorial Library.

In August last year GTRI was named one of five "Georgia Tech Quality Champions" because of its strong, ongoing commitment to CQI and the total quality management (TQM) concept. Charles Brown, GTRI Director of Research Support and Finance, noted that the new collection, informally called the TQM Library, "represents considerable progress in an important area" related to CQI.

The collection includes nearly 50 books, as well as the 20-videotape Deming Library, which covers the famed quality philosophy of W. Edwards Deming. The Deming Library is available to students as well as researchers and faculty. Those interested may go to the Reserve Desk next to the



main check-out desk in the Price Gilbert library to access to the videotapes; individual books are in the open stacks.

Meanwhile, the Atlanta Area Deming Study Group, which meets on campus the first Monday of each month, has contributed its own set of Deming tapes to the collection, along with additional commen-

tary tapes. Also, two tapes on the Malcolm Baldrige quality awards have been placed in the library by the College of Engineering.

A list of materials in Tech's TQM Library is found on page 6.

News & Notes

CRB residents had a special visitor on a recent October morning. Roman, a four-month-old yellow lab, is being trained by Melody Moore (College of Computing) as a Canine Companion for Independence. Once trained he will help a wheelchair-user by retrieving keys and other objects, getting the person into the chair, and even pulling the chair, if needed. As part of his training he is allowed to go everywhere with Moore, just as fully trained assistance animals are. Roman's good behavior and sweet disposition charmed several GTRI and OCA employees who stopped to admire him. (Photo by Lea McLees)



Materials in Tech's TQM Library

Author	Title	Publisher	Copyright
Albrect, K.; Bradford, L.	<i>The Service Advantage</i>	Dow Jones-Irwin	1990
Amsden, D.; Butler, H.; Amsden, R.	<i>SPC Simplified for Services</i>	Quality Resources	1991
Campbell, A.; Nash, L.	<i>A Sense of Mission</i>	Addison-Wesley	1992
Cornesky, Robert	<i>The Quality Professor</i>	Magna	1993
Deming, W.E.	<i>The New Economics</i>	MIT	1993
Deming, W. Edwards	<i>Out of the Crisis</i>	MIT	1986
Denton, D. Keith	<i>Horizontal Mgt.</i>	Lexington Books	1991
Freemantle, David	<i>Incredible Customer Service</i>	McGraw-Hill	1993
Gabor, Andrea	<i>The Man Who Discovered Quality</i>	Penguin	1990
Garfield, Charles	<i>Second to None</i>	Business One Irwin	1992
Hammer, M.; Champy, J.	<i>Reengineering the Corporation</i>	HarperBusiness	1993
Harmon, Roy	<i>Reinventing the Factory II</i>	The Free Press	1992
Harrington-Mackin, Deborah	<i>The Team Building Tool Kit</i>	AMACOM	1994
Haskett, J.; Sasser, W.; Hart, C.	<i>Service Breakthroughs</i>	The Free Press	1990
Hubbard, Dean	<i>Continuous Quality Improvement</i>	Prescott	1993
Hudiburg, John	<i>Winning With Quality</i>	Quality Resources	1991
Hutchins, David	<i>Achieve Total Quality</i>	Director Books	1992
Ishikawa, Kaoru	<i>What is Total Quality Control?</i>	Prentice-Hall	1985
Jablonski, Joseph	<i>Implementing TQM</i>	Technical Mgt. Con.	1990
Jamieson, D.; O'Mara, J.	<i>Managing Workforce 2000</i>	Jossey-Bass	1991
Johnson, Perry	<i>ISO 9000</i>	McGraw-Hill	1993
Juran, J.M.	<i>Juran on Leadership for Quality</i>	Free Press	1989
Juran, J.M.	<i>Juran on Quality by Design</i>	Free Press	1992
Juran, J.M.; Gryna, F.	<i>Quality Planning and Analysis</i>	McGraw-Hill	1993
Kilmann, Ralph & Ines	<i>Making Organizations Competitive</i>	Jossey-Bass	1991
McCloskey, L.; Collett, D.	<i>TQM: A Basic Text</i>	GOAL/QPC	1993
Mills, Charles	<i>The Quality Audit</i>	ASQC	1989
Reynolds, Gary	<i>Building Quality: TQM</i>	APPA	1994
Robson, George D.	<i>Continuous Process Improvement</i>	Free Press	1991
Rohrlich, Fritz	<i>From Paradox to Reality</i>	Cambridge U.	1987
Schaff, D.; Kaeter, M.	<i>Pursuing Total Quality</i>	Lakewood	1992
Scherkenbach, W.	<i>Deming's Road to Continual Improve.</i>	SPC	1991
Scherkenbach, William	<i>The Deming Route</i>	CEEPress	1992
Scholtes, Peter R.	<i>The Team Handbook</i>	Joiner	1988
Sherr, L.; Teeter, D.	<i>TQM in Higher Education</i>	Jossey-Bass	1991
Spechler, J.	<i>When America Does It Right</i>	Institute of IE's	1991
Stalk, G.; Hout, T.	<i>Competing Against Time</i>	Free Press	1990
Steeple, Marion Mills	<i>Corporate Guide...Malcolm Baldrige</i>	ASQC	1992
Tunks, Roger	<i>Fast Track to Quality</i>	McGraw-Hill	1992
Wall, B.; Solum, R.; Sobol, M.	<i>The Visionary Leader</i>	Prima	1992
Walton, Mary	<i>Deming Mgt. at Work</i>	Putnam	1990
Walton, Mary	<i>The Deming Mangement Method</i>	Putnam	1986
Wellins, R.; Bynam, W.; Wilson, J.	<i>Empowered Teams</i>	Jossey-Bass	1991
Wilson, Susan	<i>Goal Setting</i>	AMACOM	1994
Zeithaml, V.; Parsuraman, A;	<i>Delivery Quality Service</i>	Free Press	1990
Berry, L.	<i>Motivation & Goal Setting</i>	Career Press	1993

Research in the News

During August, articles describing Georgia Tech research appeared in 31 publications with a combined circulation of more than five million. Key articles, and the circulation of the publications in which they appeared, are shown below:

Popular Mechanics (circ. 1,623,000), *Designfax* (circ. 110,247) and *Unmanned Systems* carried articles on the **1994 International Aerial Robotics Competition**. Designed to show progress in the design of autonomous aerial vehicles, the annual competition is led by Rob Michelson (AERO).

Science (circ. 158,000) and *Science News* (circ. 250,000) published articles on research in the School of Physics on a technique for potentially **Controlling Epilepsy** through the alteration of chaotic brain electrical patterns. The work, done by William Ditto of Georgia Tech and researchers at Children's National Medical Center and the Naval Surface Warfare Center, was reported in the August 25 issue of the journal *Nature*.

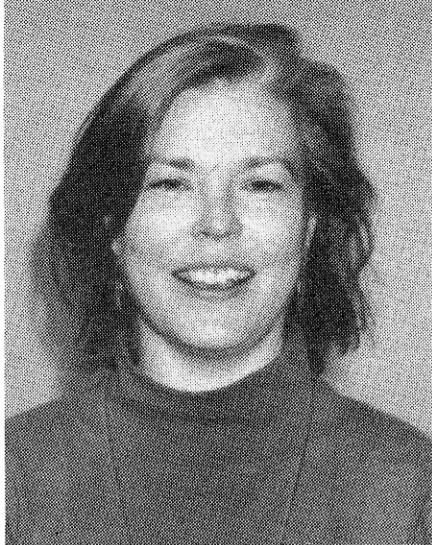
Mechanical Engineering (circ. 120,000) and *SAMPE Journal* (circ. 8,200) described Mark Allen's (ECE) work on **Magnetic Microactuators**. The work, done in the Microelectronics Research Center, has received widespread attention.

Map and imagery software written for the **Falconview Flight Planning** system by John Pyles and fellow ITL researchers was described in *Federal Computer Week* (circ. 61,000).

Popular Mechanics (circ. 1,623,000) wrote about the **Eye Surgery Simulator** being developed by the Multimedia Technology Laboratory and physicians from the Medical College of Georgia.

The San Francisco Examiner (circ. 134,000) reported on the **Intelligent Integrated Belt Manipulator** being developed by Gary McMurray and others in EOEML.

The **Window Curtain Antenna** developed by Ed Joy and others in the School of Electrical and Computer Engineering continued to generate interest with articles in *Progressive Architecture* (circ. 55,000), *Space News* (circ. 20,564) and *Satellite Retailer* (circ. 11,330).



Katie Albers



Paige McLaughlin

GTRI Greetings

Welcome to some of our newest employees!

Ten Good Things We Know About Katie Albers:

1. She started as a graduate research assistant with GTRI's Research Communications Team (RCT) on August 1.
2. Her work with RCT involves being an editor for the Annual Report and a developer of on-line communication material.
3. As a second-year graduate student in the Information Design and Technology (IDT) Program of the School of Literature, Communications and Culture (LCC), she expects to receive a master's degree in information design and technology in 1995.
4. Starting in September of last year, Katie worked as a GRA in LCC doing faculty research, providing computer support and doing preliminary format development on World Wide Web pages.
5. Though Katie is an Apple Macintosh specialist, she also admits to speaking MS-DOS and even Unix. She brings a broad range of experience — including technical writing, paralegal work and acting — to her work.
6. Katie grew up in Poughkeepsie, N.Y., at a college campus where her father worked on the faculty. Her family now lives on Cape Cod, a place she loves to visit.
7. She attended Wellesley College in Massachusetts and has a B.A. in literature from the University of the State of New York.
8. Interactive media is her future work field. "I see that interface and content are becoming the same thing, and I want to work on both — developing interfaces as a way of developing content."
9. She lives in Atlanta's Midtown area, but plans to emigrate to "one of the coasts" when her graduate work at Tech is complete.
10. When not working (which isn't often, she says), Katie enjoys going to the

theater, sailing and "hanging out with friends" — not surprising considering her cheerfulness and ready laugh.

Ten good things we know about Paige McLaughlin:

1. Paige started in July as a Research Scientist II with IITL in the Computer Science and Information Technology Division.
2. She comes to GTRI after working with AT&T Bell Labs Federal Systems Division in Whippany, N.J., and Arlington, Va. Her specialty areas there combined real-time signal processing with a X-server graphical user interface development.
3. Paige's GTRI work involves combining X-windows and Motif with networking programming. One challenge: Passing messages between heterogeneous databases and heterogeneous machines.
4. Both Paige and her husband Tom have Georgia Tech degrees. She got her M.S. in math here in 1988. He holds a Tech B.A.E in aerospace engineering.
5. She hails from the Shenandoah Valley of Virginia, where her family still lives. She received her B.S. in math from James Madison University in Virginia.
6. Both Paige and Tom, who works now for Barco Chromatics, were eager to return to Atlanta. "This is where we want to put down roots," she says.
7. The couple has a house under construction in Gwinnett County and hopes to move in by Christmas.
8. In their spare time, the McLaughlins are sailors. The hardest part of leaving the Washington area was saying good-bye to Chesapeake Bay, but they are enjoying lake-racing on Lake Lanier.
9. They also like to snow-ski and do rock-climbing, though they plan to travel a bit to do that.
10. Paige thinks the best thing about Atlanta is that "the people are so friendly." It's not surprising she values that quality, since she herself is cordial and easy to talk with.

Bette Finn: GTRI's New Research Librarian

Researchers who need help finding the latest information on any work-related topic can call Bette Finn, GTRI's new research librarian.

Finn was appointed last month by Dean Miriam Drake of the Georgia Tech Library to fill the position vacated by Ann Campbell, who is now a research associate with the Economic Development Institute.

Finn has eight years experience as a reference librarian at Georgia Tech. She holds a master's of librarianship from Emory University, and a bachelor of science in applied psychology from Georgia Tech.

"I can assist researchers with anything from simple verification to complex contract research information assistance," Finn said.

Finn can assist researchers in using Georgia Tech's Electronic Library (GTEL) system, and can help with searches in any of hundreds of on-line databases offered through commercial vendors. Fees may apply for some services.

In addition, Finn can initiate free current awareness searches in GTEL's CBDI database, the on-line version of Commerce Business Daily. Researchers can also stay abreast of current literature by asking Finn to perform free current awareness searches on other GTEL databases, such as:

- ENGI (engineering)
- INSP (electrical engineering, physics, computer science)
- NTIS (technical reports)
- PATS (patents)

Finn is a second generation Tech employee. Her father, David Finn, is retired after teaching electrical engineering here for 29 years. An Atlanta native, Finn chose to become a librarian so that she could continue her association with Georgia Tech and help scientists and engineers find information they need for projects.

To reach Finn, you may phone 894-1790; send a fax to 894-8190; or send e-mail to bette.finn@library.gatech.edu.



Bette Finn

*Focus
on
Folks*

Focus on Folks

Professional Activities

Electro-optics, Environment and Materials Laboratory

Bob Schwerzel attended the annual program review meeting for the Solid State & Surface Chemical Science & Technology Program of the Office of Naval Research, in Minneapolis, Minn. September 28-30.

On September 22, **Wendy Jones** participated in a conference sponsored by the medical management firm EMR. As a member of a discussion panel, she addressed ergonomics questions from an audience of approximately 50 EMR clients. These questions covered topics such as ergonomics program management, the requirements of OSHA's proposed standard, training methods, and available courses in ergonomics.

Paul Schlumper gave a presentation on OSHA to the Crisp/Dooly Counties' Existing Industry Council meeting in Cordele, Ga. on October 5.

On August 22, **Vicki Ainslie** and **Myrtle Turner-Sippio** presented a program on "Lead Abatement" at the Sixth Annual Florida Safety and Health Conference in Tampa, Fla. Information presented included lead abatement techniques, applicable regulations related to Lead in Construction: OSHA Standard 29 CFR 1926.62, and Title X Residential Lead Based Paint Hazard Reduction Act of 1992.

Bob Newsom and **John Nemeth** attended METATECHNIES 94 - An International Symposium (co-sponsored by Georgia Tech and the University of Bordeaux) on the Stabilization and Valorisation of Ultimate Waste - Plasma and Other Processes. The symposium was held September 11-15 at the Palais Des Congres in Bordeaux, France. Newsom presented a poster session on the Georgia Tech Plasma Application Research Facility - Research and Development Programs. (An abstract and overview paper will be published in the symposium proceedings.) Nemeth presented the planning and outline of the program for the next symposium, to be held in Atlanta in 1995. Other Tech attendees at the symposium included **Mike Saunders** (CEE), **Lou Circeo** (ARCH/CRC), and **Paul Mayne** (CEE). The symposium included an on-site visit to a French-operated plasma processing facility for vitrification of asbestos-containing materials.

Electronic Systems Laboratory

William E. (Bud) Sears and **D.C. Flowers** were asked by the Australian Department of Defense to present their Advanced EW Principles short course to the Defence Science and Technology Organisation research staff in Adelaide, South Australia. They presented the three-day course to about 30 engineers and scientists, August 8-10. The course was very well received.

Administrative Information Systems Team

Three AIST employees presented papers at the 1994 International Oracle Users Group's User Week in San Francisco, Calif., September 26-30. All three were presented September 26: "Oracle7 Roles and Privileges and Their Impact on the Use of Various Application Development Tools," presented by **Tom Brown**; "Using PowerBuilder with the Oracle Server," presented by **Ron Creswell**; and "Configuring PCs Under DOS/Windows as an Oracle Client," presented by **Tony White**.

Personnel News

Denver C. York, GRA, has transferred from SDL to STL.

ELSYS welcomes **Myron L. Cramer**, Principal Research Scientist and new Senior Faculty Research Leader in competitive information technologies.

AIST welcomes Computer Services Specialist IV **Keith Watson** and co-op **Mark Forrester**.

Personal Notes

Cradle Roll

Mary Jo and **Tom Pratt** (ELSYS) welcomed a son, James Anthony, on September 16.

Volunteers

Several members of the **Materials Analytical Center** staff volunteered to host the accelerated sixth grade class (Probe program) from Lawrenceville Middle School on September 27 and 28. The class is studying about microscopes in school and wanted to see a "real world laboratory" and electron microscopes. At least 45 students visited each of the two days. They saw a demonstration and mini-lesson on analytical instrumentation and materials characterization of human hair, clay, plastic, bugs and integrated circuits.

Congratulations!

Phil West (ELSYS) successfully defended his thesis and received the required signatures from his committee in September. He is now Dr. Phil West. The degree is conferred by the School of Electrical and Computer Engineering. Congratulations, Phil!



Welcome Back

Jim Page (ELSYS) recently returned to work part time after spending several months recovering from serious injuries he received in a June auto accident. He hopes to be working full time soon. GTRI is glad you're back, Jim!

In Appreciation

About 40 GTRI employees joined together at an October 3 luncheon to show their appreciation for colleague **Renette Miller's** almost eight years of accounting work for Fiscal Services. Renette, whose last day was September 30, has multiple sclerosis. As a farewell gift, GTRI co-workers presented her with gift certificates for a grocery store near her home that provides home delivery. If you would like to participate with additional contributions, you may call **Barbara Walsh** at 894-3677.

In Our Thoughts

Harold Knouse's (SDL), **Jeff Sitterle's** (SDL) and **Dan Hawes'** (SDL) fathers are all doing well after heart attacks during September.

Our Sympathy

...to the family, friends and colleagues of **Vernon Crawford**, an honorary alumnus of Georgia Tech and former Chancellor of the University System of Georgia. He died September 26 of cancer. Crawford came to Tech in 1949 as an associate professor of physics. During his 30-year career at Tech, Crawford served as acting president, acting dean of the College of Architecture, and acting dean of the College of Industrial Management. In addition, he also served as director of the School of Physics, dean of the General College, and vice president for Academic Affairs.

...to the family, friends & colleagues of GTRI retiree **Tudor Thomas**, 73, who died October 5. He worked at GTRI from 1983 to 1991, retiring as head of the zeolite program and principal research scientist in what was then the Materials Science and Technology Lab. He is survived by his wife of 50 years, Dorothy; three daughters, a son, nine grandchildren and three great-grandchildren. Donations in his honor may be made to the American Heart Association, 433 Main Street, Medina, N.Y. 14103.

...to the family, friends, and colleagues of **Eleanor Hancock Sheppard**, who died of cancer on October 17 in Lakeland, Fla. She served as a secretary at GTRI during much of the 1970s. Her husband, Albert P. Sheppard, Jr., served at Georgia Tech in positions including Vice President for Interdisciplinary Programs, Associate Vice President for Research, and Head of GTRI's former Chemical Sciences & Materials Division.

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