The GTRI Connector

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Did You Know...

A tuna can swim 100 miles in a single day.

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The onion is a lily, botanically.

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Deimos, one of the moons of Mars, sets twice a day.

--from *2201 Fascinating Facts* by David Louis

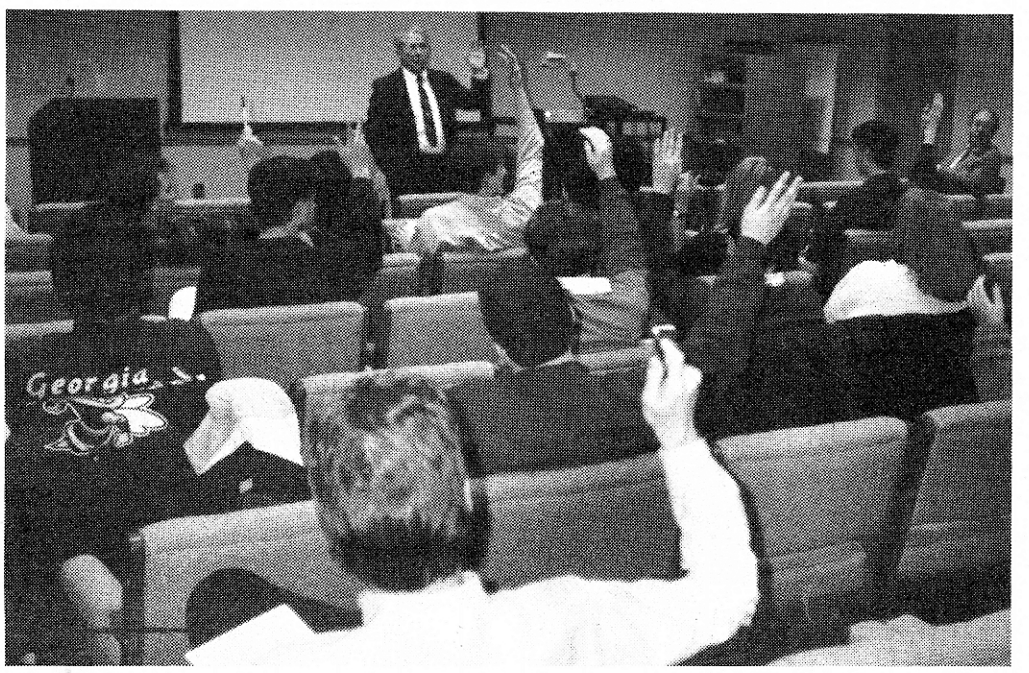
Defense Conversion Working Group Begins 1994 Action

By Jim Cofer, ACO

In February 1993, GTRI Director Richard Truly formed Georgia Tech's first campus-wide Defense Conversion Working Group, chaired by Jim Cofer, Director of GTRI's Advanced Concepts Office. The group was charged with formulating Tech's response to President Clinton's call to commercialize defense technology under the Technology Reinvestment Project (TRP). By July 1993 Tech had participated in 25 proposals, either as prime or subcontractor. As of publication of this article, three of these proposals had been funded for a total of more than $9 million, plus matching funds, with two others still under evaluation.

This year's edition of the working group draws members from GTRI, the Bio-Engineering Research Center, the Economic Development Institute, the Microelectronics Research Center, the Office of Interdisciplinary Programs, the School of Public Policy, the Manufacturing Research Center, Civil Engineering, and Mechanical Engineering. The group has expanded its mission over last year to include the TRP again, as well as the National Institute of Standards and Technology's (NIST) Advanced Technology Program (ATP), the Small Business Technology Transfer Program (STTR), and the Small Business Innovation Research (SBIR) program. Some of these opportunities require cost matching, and all of them require industry participation.

Continued on page 2



Richard Truly leads a discussion with GTRI co-ops, who met January 11. Cathy Dunnaboo (PST) organized the meeting at the request of Pat O'Hare (RS&F) to talk about changing FICA/retirement requirements and get feedback about how often the group should meet. (Photo by John Toon)

McMillan Named IEEE Fellow

By Lea McLees, RCT

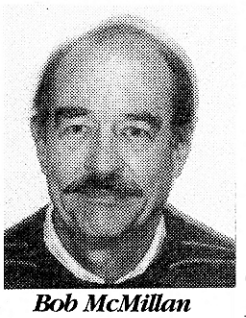
A GTRI principal research scientist has been elected to the highest membership rank of the Institute of Electrical and Electronics Engineers (IEEE).

Robert W. McMillan (SDL) was recently named an IEEE Fellow by the organization's board of directors, along with two Georgia Tech Electrical and Computer Engineering professors, Edward W. Kamen and Rao R. Tummala. Kamen is the Julian T. Hightower Chair in Manufacturing Engineering, and Tummala is the Joseph M. Pettit Chair in Electronics Packaging and Georgia Research Alliance Eminent Scholar.

The three are among 49 fellows elected this year from a pool of 486 candidates reviewed. There are about 4,800 IEEE Fellows among IEEE's 320,000 active members.

McMillan, a GTRI employee for almost 18 years, was recognized for "development of phase and frequency control techniques for millimeter wave electromagnetic sources in the 40 to 340 GHz range," according to his citation letter.

"I'm very pleased, " McMillan said of the honor. "It's peer recognition of my work, which I'm very grateful for. My work is interesting, and it is always a challenge."



Bob McMillan

McMillan joins five other IEEE Fellows

Continued on Page 7

Observed & Noted

CONNECTOR readers within GTRI may notice that the February issues do not have individual, personalized labels on them. GTRI's mailroom and RCT are testing the organization's new, more detailed mail coding system to see if it will make mass mailings possible within GTRI without labels, thus saving time and money.

Your February CONNECTOR should have been delivered exactly as it has been in the past, straight to your mailbox — but without the extra time it takes mailroom personnel to put each issue with each particular name on it into the corresponding mailbox.

Because THE CONNECTOR is not a mass mailing to the academic schools and colleges, recipients on the mailing list there will continue to receive labeled copies.

If you have any questions or comments about this effort and how well it works in your lab, office or department, please call RCT at 894-6989. We and your mailroom colleagues need and appreciate your feedback on this test.

GTRI is updating its mail codes. *For information on the changes, see page 3.*

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More internal research news is included in this month's issue. *Read about two more projects on page 4.*

■

Georgia Tech research is in the news. *Turn to page 6 to find out which projects have been featured in a variety of publications.*

News & Notes

Research Commercialization Proposals Due In March

The deadline for submitting proposals for the Advanced Technology Development Center's (ATDC) Faculty Research Commercialization Program (FRCP) is quickly approaching.

Ten unbound copies of each completed proposal are due to ATDC by 1 p.m. March 21. Only applied research projects directed at a specific product or technology with commercial potential and a demonstrated market opportunity will be considered.

The FRCP was developed to help move promising research technology into a manufacturing prototype of a marketable product. Selected work can earn suppport in the form of an ATDC "sponsored project," valued at up to $50,000 per project. The funds may be used for expenditures such as equipment, materials, contract consulting and release time, just as any other research contract. The funds are exempt from overhead, and student involvement on the projects is encouraged. The deliverable for each project chosen is a "prototype" or "near-prototype" product that could be the basis for establishing a new company.

Among the criteria evaluated are: scientific and technical evaluation, likelihood of success in the marketplace, qualifications of program personnel, attractiveness to industry, relevance of the project to the Georgia economy, and potential for job creation in Georgia.

Proposal reviews will be complete by May 6 and awards will be announced May 24.

ATDC was formed in 1980 by the Governor and the Georgia General Assembly to increase the high technology business base in Georgia. If you have questions about this project, please call program manager Shelia Stanley at 894-3575.

March 28 Deadline Announced for Emory/ Tech Biomedical Research Applications

The Emory/Georgia Tech Biomedical Technology Research Center is accepting proposals for collaborative research among investigators from both institutions.

Each proposal submitted for consideration must have at least one co-principal investigator from Emory and one from Tech, according to the February mailing detailing the program. Each co-principal must be a full-time permanent faculty member with rank of assistant professor or higher at his or her respective institution.

An original and 12 copies of the application seeking July 1 funding must be submitted by March 28. Proposals may be solicited in any of the following four categories:

Seed grant program: For stimulating new research collaborations and ideas. At least one co-investigator must have been previously funded by the Emory/Georgia Tech center, and the requested budget should not exceed $30,000.

Established collaborator: Aids an established collaboration that has made substantial progress but has not yet won external funding. Must include documentation of a proposal that has been or will be submitted to an outside agency, along with reviews, if the project has been evaluated. A jointly published manuscript or letter of acceptance may be offered as evidence of an established collaboration. Proposed budgets should not exceed $30,000.

Centers of Excellence Program: Designed to help established collaborations and multiple investigators in a particular area form a cohesive research team that can compete for major levels of external funding. Multiple years of support are allowed; yearly progress reports are subject to a thorough review. The proposed budget should not exceed $50,000.

Medtronic's Synergy Program: Intended to stimulate research collaboration in the cardiovascular and neurological areas, with a particular interest in electrical stimulation and vascular therapies. Also of interest are novel concepts involving implantable devices for which medical need exists. Proposals in this area may be simultaneously considered for this and one of the other award types.

Grant applications should request funding for up to one year. Except for seed grants, renewals for a second year may be permitted, subject to demonstrated progress and a competing renewal application. Seed grant renewals should be submitted under the Established Collaborator program. Final reports are due August 1, 1995.

For more information contact either of the following:

Ajit P. Yoganathan
Professor of Chemical and
Mechanical Engineering
Co-Director, Bioengineering Ctr. and
Emory/Tech Biomedical Tech. Ctr.
Mail Code: 0100
Phone: 894-2849

R. Wayne Alexander
R. Bruce Logue Professor and
Director, Division of Cardiology
Emory University School of Medicine
P.O. Drawer LL
Atlanta, Ga. 30322
727-8143

Defense *From page 1*

These programs are intended to stimulate economic growth by transitioning defense resources — people, ideas and facilities — into development of competitive commercial products. TRP has the secondary mission of reducing military hardware costs through the development of "dual-use" products. Technology focus areas for these programs include: information infrastructure, electronics, mechanical, materials, health care, educational, environmental, aeronautical, vehicles, shipbuilding and batteries.

One of the greatest challenges Tech faces is finding suitable industrial teammates who are willing to do new product development in a government partnership environment. This is totally foreign to the traditionally commercial firm. Several initiatives to publicize these programs and Tech's interests are underway, including articles in Georgia publications, personal letters to large companies, and an "Open House" during which campus research leaders will showcase their capabilities to visiting industry representatives.

Requests for proposals for both TRP and ATP should be available from the Advanced Research Projects Agency (ARPA) and NIST, respectively, in mid-April. If you want to know more about these opportunities or would like help in finding partners for ideas, contact Jim Cofer at 528-7010.

SELECTED JANUARY 1994 AWARDS

Title	PI/Laboratory	Sponsor	Funded Amount
Appl. of Neural Networks and Other Non-Linear Techs. to Copper...	Schlag, K. (ELSYS)	Southwire Co.	$100,000.00
Permeation Testing of Organic Compounds in Plastic Materials	Detter-Hoskin, L. (EOEML)	Coca-Cola Co.	118,207.00
Prototype Integrated Optic Sensor for PH Monitoring	Hyde, R. (EOEML)	Photonic Sensor Systems, Inc.	184,407.00
Second Year Funding for Southern Lead Training Consortium	Ainslie, V. (EOEML)	Natl. Univ./Continuing Ed.	115,354.00
Lab. Investigations of Stratospheric Halogen Chemistry	Wine, P. (EOEML)	NASA	161,000.00
Technical Support for Alpha	Strickland, M. (HRO)	Army	39,985.00
MIDAS Hawk Test Support	Schaefer, L. (HRO)	Army	194,968.00
Info. System Anal., Design and Development for ValuJet Airlines	Tjaden, G. (ITL)	ValuJet Airlines	37,135.00
Software Arch. and Dev. for FAISS	Atha, J. (HRO)	Army	42,000.00
Comanche System Engineering Development	Grover, J. (ITL)	Rail Company	41,857.19
Microwave Energy Transfer Concept	McMillian, R. (SDL)	HR Ross Industries	35,000.00
ECCM Vulnerability Assessment Amendment	Morris, G. (SEAL)	Air Force	210,000.00
Systems Engineering Management Support for Longbow	Holm, W. (SEAL)	SAIC	23,326.00
Review of SOF Platforms and Systems	Millard, D. (SEAL)	Air Force	250,000.00

News & Notes

GTRI Gets More Detailed Mail Codes for Bulk Sendouts

By Harry Vann, SSD

More specific mail codes are being assigned to GTRI mail drops to increase the efficiency and speed with which bulk mailings are delivered to employees.

Currently, bulk mail within the 0800 code is delivered to the Tech mailroom and grouped by GTRI unit (lab, office, department, team, etc.) — that does not correspond to the mail drops the GTRI Mailroom uses. Creating more specific mail codes should alleviate the need to resort the mail before delivery.

When Georgia Tech originally went to the mail code system, GTRI was assigned a block of codes from 0800 to 0899. At that time, GTRI elected to use only 0800 code

The new system uses the available codes between 0800 & 0899 to specifically correspond to the GTRI mail drops. They do not change current mail stops within GTRI — your mail will continue to arrive at the same destination you are used to each day. Further, the codes are intended mainly for use in bulk mailings to GTRI employees. Groups and individuals also may wish to use the more detailed mail codes to aid in sorting. However, the primary purpose for adding these codes is to deal with bulk mailings.

Final adjustments to the list of new codes should be complete by the end of February. Payroll and Records Services will be using the codes, and lists of them will be distributed around campus. Several Georgia Tech groups, including the campus Publications Office and the Athletic Association, have started using the new GTRI mail codes to sort mass mailings. By subdividing the 0800 code we should be able to simplify bulk mailing deliveries.

If you have questions about the new codes or using them, you may call Harry Vann at 894-3511.

Georgia Tech
RESEARCH INSTITUTE

E-Mail Distribution Lists Updated, Changed

By Lea McLees, RCT

By the end of February GTRI's old e-mail distribution lists — DistA through DistG — will be phased out and replaced with new, more up-to-date distributions. The new lists will reflect GTRI's reorganization and will reduce duplication of e-mail messages, said GTRI's Computer Coordinator Tony White (AIST), who is overseeing this effort.

Following is a summary of the new distribution lists and who receives messages sent to each address:

exec.staff	Richard Truly, Ed Reedy, Charles Brown, Devon Crowe and Janice Porter.
exec.staff+	Adds Don Wilmot, Jim Cofer, John Nemeth, and Pat O'Hare to exec.staff recipients.
lab.dirs	Goes only to lab directors: Bob Cassanova, Bob Hyde, Bob Trebits, Joe Parks, John Meadors, Larry Holland, Randy Case and Richard Stanley.
senior.staff	Includes exec.staff+, lab.dirs, Barbara Walsh, Carolyn Mahaffey, Bob Lang, Tom Brown and Evan Chastain.
support.mgrs	Goes only to managers and heads of all autonomous Research Support and Finance groups.
admin.support	Intended for those who closely support GTRI administrators — administrative assistants, equipment coordinators, senior secretaries, etc. Anyone can have his/her name added to this list by contacting White.
all.units	Combines senior.staff, admin.support, and support.mgrs.
gtri.csrs	Includes all GTRI computing support representatives, along with anyone in GTRI who needs to know about computers and networking. Contact White to be added to the list.

White later will create distribution lists for each lab; for all project directors; for all federal field office personnel; and others. To use any of the lists, just address your e-mail to the list name you select, followed by @gtri — admin.support@gtri, for example.

All of the new e-mail distributions soon will be managed by a software program called MajorDomo. This means that distribution lists for individual department needs can be created easily, as well. For example, White is creating a distribution list for all fiscal operations senior staff throughout GTRI (fo.ss). All that is required is that someone take responsibility for maintaining each additional list that is requested. The MajorDomo software for managing the lists will be accessed through e-mail and is easy to use, White said.

If you have questions about the distribution lists; would like to be added to admin.support or gtri.csrs; or would like to find out how to set up a distribution list, you may send e-mail to White at tony.white@gtri.gatech.edu, or call 853-3058.

Getting Started on E-Mail

By Lea McLees, RCT

Accessing electronic mail (e-mail) is very much like purchasing that first clothes washer/dryer combination — pretty soon you wonder how you lived without it.

If you are new to e-mail, this article is for you. Included are the basics for new employees and for familiar faces who need some guidance on exploring e-mail.

Throughout this article you will see the term computing support representative (CSR). This person is designated by your lab or department to help with computer-related tasks. Your CSR can help you set up your computer for e-mail, show you how to use it, and lead you into the world of information available through the computer network. If you do not know your CSR, you can call Help Desk at 894-7173 to get that person's name.

How Does Georgia Tech E-mail Work?

E-mail allows you to send and receive messages around the world via computers in seconds or minutes. Recipients read your messages at their convenience and can reply instantly to you. Because Georgia Tech is part of the Internet, a worldwide computer network, users can communicate with any of 10 million other users — colleagues across the ocean, sponsors across the nation or fellow Tech employees across campus — without using a single sheet of paper. Eventually you can learn how to exchange messages with people who have CompuServe or MCI Mail accounts, two different computer networks.

Where Do I Start?

First, you need to find out about your e-mail account. These accounts are set up free for all full-time Georgia Tech faculty and staff, as well as for all full- and part-time students, when they arrive on campus. Your e-mail account is either located on a local e-mail server for your department, or on HYDRA, the Georgia Tech "main" computer. (HYDRA is being replaced by an even more powerful machine called ACME at the end of winter quarter.)

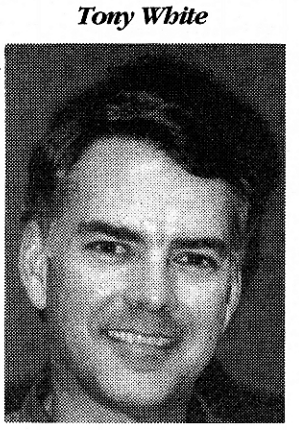
How Do I Find Out About My Account?

Contact your CSR. He or she can tell you which e-mail server your account is set up on and where to go for information. If your CSR sees that you will be using HYDRA or ACME, he or she will send you to the Office of Information Technology (OIT, in the Rich Building) to validate your account. At that time you will learn your initial password and will be asked to read and sign a sheet that explains what you can and cannot do with your account, says Tony Gilmer, OIT's training coordinator. You leave OIT with a reminder card that includes your initial password, which you will change later to a password you can easily remember.

Tony White

What Does My Computer Need?

Now you have your password — but your computer needs some basic hardware and software to access e-mail. Your CSR can



Tony Gilmer

Continued on page 4

News & Notes

Nominations Opened for Distinguished Professor, Other Awards

The Institute Honors Committee is accepting nominations for the top 1994 faculty awards presented at Georgia Tech.

The awards are 1994 Distinguished Professor; W. Roane Beard Outstanding Teacher; Outstanding Service; Outstanding Interdisciplinary Activity; and, for the first time, Outstanding Continuing Education honors.

The Distinguished Professor Award is made possible through funding established by the Class of 1934. It is presented to a pioneer in education, public service and research. Previous recipients include Daniel S. Papp (International Affairs), Uzi Landman (Physics), Robert F. Hochman (Materials Science and Engineering) and others.

Candidates for this award should have achieved national and international reputations in their fields of endeavor. Each nominee's package should include a detailed resume and a nomination letter from the candidate's immediate superior, as well as letters of recommendation from individuals both inside and outside of Georgia Tech.

The packages for the remaining four awards should contain, at a minimum, detailed resumes and a nominating letter.

The W. Roane Beard Outstanding Teacher Awards are funded by the Class of 1940. They honor excellence and extraordinary efforts in teaching, direct involvement with students, impact on postgraduate success of students, and intellectual integrity and scholarship. Nominating packages for these awards should include letters of recommendation from former students.

The Outstanding Service Award is presented to an individual who has benefitted the Institute, profession, school, department or general public in an exemplary manner. It is made possible by funding from the Office of the Executive Vice President.

The Outstanding Interdisciplinary Activities Award recognizes faculty who have made significant interdisciplinary contributions to teaching and research. Nominations of multiple names to share in the award will be accepted. When possible, this award will recognize activities by young, untenured faculty.

The Outstanding Continuing Education Award recognizes outstanding contributions to the Institute, profession, industry/government, and/or general public in continuing education. It is based on excellence in instruction, value of courses to participants, and development of successful new courses.

For more information you may call Edward Reedy at 894-7788. All nomination packages must be received by the Institute Honors Committee by April 15. Send packages to:

Edward K. Reedy
Faculty Honors Committee Chairman
Georgia Tech Research Institute
Centennial Research Building
Atlanta, Ga. 30332-0405

Tel: 404-894-7788
FAX: 404-853-0061
E-Mail: ed.reedy@gtri.gatech.edu

Teachers from Northeast Georgia join Richard Truly in watching a demonstration of robotics technology applicable to the poultry industry on February 17. As part of the Georgia Initiative in Mathematics and Science, the 16 teachers saw Georgia Tech demonstrations of how math and science are used in industry and research. (Photo by Rae Adams)

E-Mail ***From page 3***

help you determine whether your computer already has a hardware hookup and correct e-mail software.

How Is My Computer Hooked Up to the Georgia Tech Network?

The best hookup for both IBM, IBM-compatible and Macintosh users is a direct Ethernet connection. Macintosh users can get an Appletalk-to-Ethernet hookup, the next best option. Slower and far less capable is an NIU serial hookup. Finally, the slowest option is a modem, which dials into the network each time you want access. Your CSR can help you figure out what kind of hookup you have or might need and what the cost is, if a hookup needs to be installed.

What About Software?

Once the connection is set up, you need software that allows you to read and respond to the e-mail your computer accesses. Your CSR can help you determine which software is best for you, based on what your lab or department generally uses. The software is available free through OIT. If you have a Macintosh, you will almost certainly use EUDORA IBM-PC types of computers that run MS-WINDOWS generally use PC/EUDORA or NUPOP for e-mail. IBM-PC types that do not run WINDOWS generally use NUPOP. Although these software programs are the most frequently used at Georgia Tech, some labs or departments may use other types, such as MICROSOFT MAIL or COURIER MAIL. All of these e-mail programs can send and receive e-mail from any other program.

Will Someone Teach Me How to Use This?

Some people figure out how to use their software and start e-mailing on their own or with help from co-workers or CSRs — particularly if they have EUDORA, which is especially easy to learn — but others need some instruction. OIT offers free classes for new computer account users. Tony Gilmer's "Using Your Georgia Tech Computer Account" is the most basic, teaching you how to change your password, use UNIX e-mail and access newsgroups. "Using ELM and the PICO Editor" and Introduction to NUPOP" are offered regularly. EUDORA and PC/EUDORA classes are offered as requested. To find out about the class schedule, you may call OIT at 894-4660.

Thanks to several employees for suggesting this article. If you would like to suggest a topic, please call Lea McLees at 853-9079.

More Internal Research News

By Lea McLees, RCT

Last month we told you about four of the six internal research projects funded in December. The projects were selected from 34 proposals reviewed by the GTRI Fellows Council. Following are summaries of the two remaining projects selected. Look for more in-depth articles about all six projects in future issues.

Laser Generation and Sensing of Ultrasound for Non-Destructive Testing: Methods of detecting flaws in molded materials such as concrete are becoming increasingly important as the United States focuses on improved manufacturing technology. However, many current methods are limited — they do not work in real time, or do not provide clear, detailed images, for example. GTRI researchers plan to develop a novel way of monitoring and detecting flaws — by combining a laser-generating system with another device that turns the lasers into ultrasound, which can then be used to see inside of solid structures. The technology could detect cracks, deformities and contamination in solder joints, concrete supports or other materials. Participants are SEAL's Gary Caille, Michael Gray and John Doane.

Development of an Intelligent Advanced Traffic Management System: Managing traffic around Atlanta during the 1996 Summer Games could be an Olympian task. GTRI researchers will offer their expertise by developing a computerized advanced traffic management system (ATMS) that works in real time to control the city's traffic. The ATMS also will tell travelers the best routes and modes of transportation to their destinations. This project will rely on the modeling, simulation, neural network and expert systems knowledge and skills of GTRI researchers. The ATMS they develop will be programmed to control traffic signals around town, but also will "learn" from and adapt to current traffic conditions. Among the factors the system will consider are special events traffic, congestion on interstates and at intersections, road maintenance and accidents. Three Ph.D. students will write dissertations on the work. Researchers on the project are ITL's John Gilmore and Stefan Roth, along with Civil Engineering's Peter Parsonson.

Shackelford Fellows Program Announced

By Lea McLees, RCT

Selected graduate research assistants working in GTRI labs have been named Robert G. Shackelford Graduate Fellows, in honor of the organization's late executive associate director. Director Richard Truly announced the honor at the January 25 Georgia Tech tribute to Shackelford, held in the Gordy Room of Wardlaw Center. At least 160 people attended the gathering, at which Truly presented a framed letter announcing the Fellows program to Shackelford's family.

" I'm very proud of the 27 graduate students who are this first cadre of Shackleford Graduate Fellows," Truly said. "This important program will now permanently bear Bob's name."

The 27 GRAs, all of whom are already employed at GTRI, were chosen based on their high standards of excellence in scholarship. They received a letter from Truly informing them of their selection.

Shackelford is remembered through the Fellows program for his 34 years of service to Tech, which began when he joined the Engineering Experiment Station in 1959. He worked as a principal research scientist, chief of the Electro-Optics Division and director of the Electromagnetics Laboratory before becoming executive associate director. He earned a B.E.E. in 1959, an M.S.E.E. in 1962, and an M.S. in Physics in 1967, all from Tech. Shackelford worked on programs ranging
from sensors and lasers to radar, microelectronics, atmospheric studies and guidance systems, and authored more than 44 major reports and publications.

The program, which has existed since at least 1984, assists students at various points in their research careers. Some of the Fellows are students beginning their first quarter of work at GTRI. Others are performing advanced work on projects which can also serve as thesis research. Each of the students was among the top 20 percent of his/her undergraduate class at one of the best 50 schools in his/her discipline; or, was among the top 10 percent of his/her undergraduate class at other institutions. The continuing students are close to completion of their doctoral degrees, have excellent grades and academic recommendations, and several have passed the required exams for their Ph.D programs.

New students who are named Fellows receive support for three quarters, cost-shared by Dr. Helen Grenga of Graduate Studies, in return for work on GTRI projects. Many of the continuing students have moved to other sources of funding as they have gained extus" is reserved for retirees who have ten years or more of honorable and distinguished service upon retirement, and is occasionally conferred posthumously. Additional tributes to Shackelford have included a framed proclamation presented by Ron Bell of Georgia Tech Research Corporation to Barbara Shackelford, honoring her late husband's contributions to GTRC and the entire Tech campus. The Board of Regents conferred the honarary "Emeritus" title on Shackelford postumouly at its early Ferbruary meeting. "Emeritus" is reserved for retirees who have ten yeaers or more of honorable and distinguished service upon retirement, and is occasionally conferred postumously. The president of the institution the employee served must request that the Regents consider conferring the title.

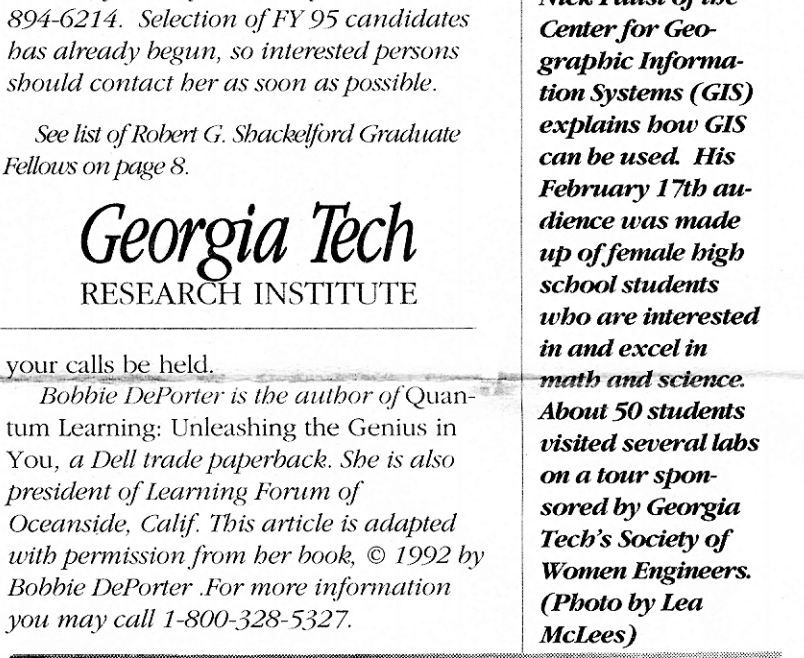
Speakers who remembered Shackelford's contributions at the January tribute included Bell; Pat O'Hare, Truly, and Charles Brown, all of GTRI; Paul Wine, Chemistry/Biochemistry; Don Grace, past director of GTRI; Tech President John Crecine and Executive Vice President Mike Thomas; and Mike Sorrow, Southwest Christian Hospice.

For more information on the FY95 Robert G. Shackelford Graduate Fellows awards, you may call Cathy Dunnahoo at 894-6214. Selection of FY 95 candidates has already begun, so interested persons should contact her as soon as possible.

See list of Robert G. Shackelford Graduate Fellows on page 8.

Georgia Tech
RESEARCH INSTITUTE

News & Notes



Nick Faust of the Center for Geographic Information Systems (GIS) explains how GIS can be used. His February 17th audience was made up of female high school students who are interested in and excel in math and science. About 50 students visited several labs on a tour sponsored by Georgia Tech's Society of Women Engineers. (Photo by Lea McLees)

Editor's Note: The following article appeared in a professional publication that we RCTers read. We thought it might be helpful to our GTRI colleagues, as well, so we include a portion of it here, with the rest to follow in March.

Here's How...

To Conquer those Mountains of Material

By Bobbi DePorter, Learning Forum/ Oceanside, Calif.

You have presentations to prepare, statistics to memorize, clients to inform, bosses to update, an explosion of information to keep up with.

What do you do?

To get ahead and stay ahead, you must conquer the information age rather than be overcome by it. And you can do it by mastering accelerated learning techniques.

If you're overwhelmed with the amount of material you must read and remember every day, here are some proven ways to help you absorb and retain all that information with a minimum of stress:

✦ Realize that your physiology can affect your ability to learn.

Try this experiment: Slump in your chair. Tilt your head down and cross your arms. Stick out your lips in a pout and tense the muscles around your eyes. In this position, try to feel like a great learner — excited and confident. You probably can't.

Now, sit up straight with your eyes wide open. Throw back your shoulders and let a smile play around the corners of your mouth. In this position, try to feel depressed. Again, you probably can't.

✦ Cultivate a winning attitude. If you feel defeated by looking at the mountain of material you must deal with, you won't succeed. Maintaining a positive attitude is your most important learning asset. As Henry Ford said, "If you think you can, you can. If you think you can't, you can't. Either way you are right."

Here are some positive messages to give yourself to overcome barriers along the way:

—I know I can make this work.
—I'm committed to mastering this.
—My brain is in high gear.

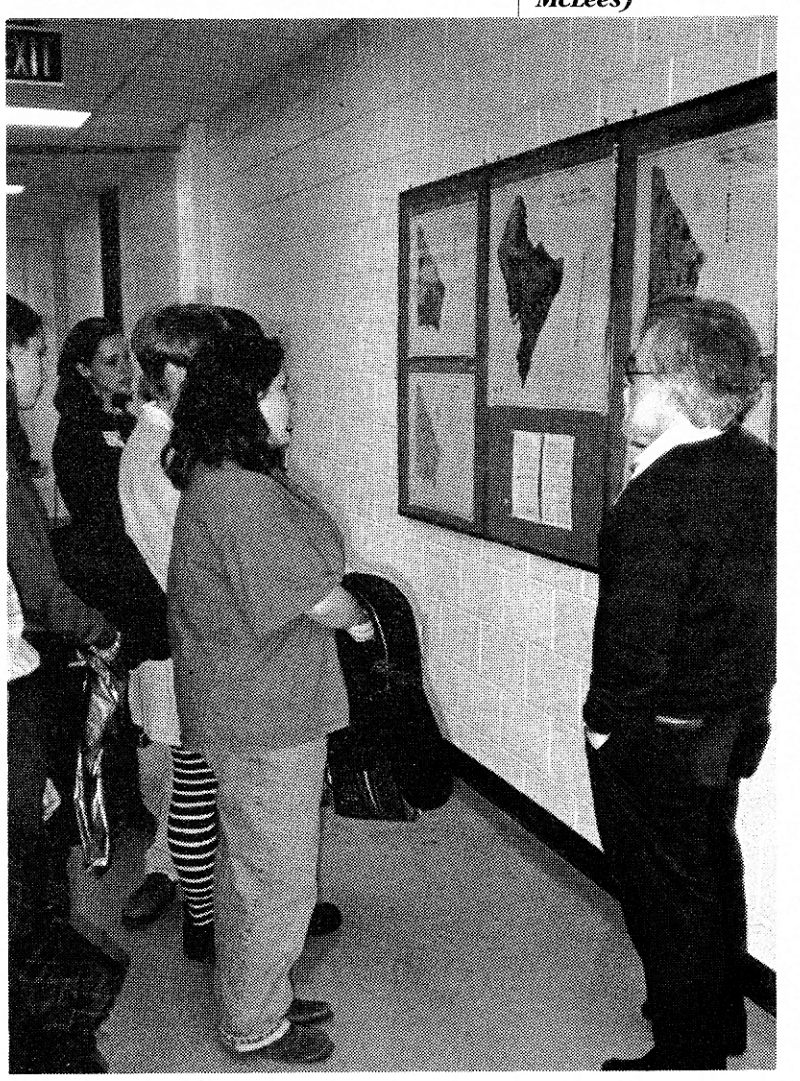
✦ Create the right learning environment. Environment affects how well you learn. The trick is to create an atmosphere that induces comfort and relaxation, because you concentrate best and learn most easily in a state of "relaxed focus." Tense muscles divert your blood supply — and your attention.

The first goal is to claim a space — especially at home — that doesn't get much traffic. It might be a studio or den, a section of the garage, an attic room, or an old toolshed behind the house.

Next, determine how you learn best. Do you prefer an formal or an unstructured work area? Think of situations where you were able to concentrate easily without stress. Was it sitting at a desk facing the wall? At a table in front of a window? Sprawling over cushions on the floor?

At the office, try as much as possible to take the things that work for you at home and apply them. Also: Consider placing a "later, please" sign on your door if you don't want to be disturbed — and ask that your calls be held.

Bobbie DePorter is the author of Quantum Learning: Unleashing the Genius in You, *a Dell trade paperback. She is also president of Learning Forum of Oceanside, Calif. This article is adapted with permission from her book, © 1992 by Bobbie DePorter .For more information you may call 1-800-328-5327.*



Profile & Insight

Research In the News

During November, news of Georgia Tech research appeared in 65 publications with a combined circulation of more than 9.8 million. Highlights of these news media placements are shown below, with circulation statistics from the publications cited:

•A joint project between GTRI and the School of Materials Engineering continued to gain visibility. News articles about research on evaluating **alternatives to CFCs for electronics manufacture** appeared in *C3I News*, *Circuit News Assembly* (14,056), *Precision Cleaning*, *Advanced Manufacturing Technology*, *Design News* (166,688), and *Electronic Design* (165,000). The work is being headed by Laura Turbini from MSE and John Pierson from GTRI.

• The **Phosphor Technology Center**, led by Chris Summers, also continued to gain attention with articles in *Medical Equipment Designer* (15,000), *RF Design* (50,002), *MRS Bulletin* (11,000) and *Designfax* (110,247). News of this work has appeared in publications with a combined circulation of nearly 1 million.

•Research on using a **plasma arc torch** to stabilize weak soils was described in *Design News* (166,688), *Inside R&D*, *Advanced Coatings & Surface Technology*, *The Columbus Dispatch* (264,601), and *The Pittsburgh Post-Gazette* (275,000). News of the work, led by Lou Circeo in the Construction Research Center, has now appeared in publications with a combined circulation of 1.8 million.

•*IEEE Spectrum* (291,249) included the work of Raj Roy (School of Physics) in an article on **controlling chaos** in physical systems.

• Work by Jeff Hsieh (School of Chemical Engineering) on finding a possible **use for kudzu** was described in *The Albany Herald*, *The Chronicle of Higher Education* (96,177), *The Columbia State* (134,945), *The Chicago Tribune* (724,257), and *The Macon Telegraph* (77,000).

Thomas Jones, center in suit, is joined at this retirement reception by employees he has worked with over the years at his retirement reception. (Photo by Lea McLees)

GTRI Says "Thanks!" To Thomas Jones

By Lea McLees, RCT

A familiar face in facilities management enjoyed a warm retirement reception and roast hosted by GTRI friends in January. At least 50 people gathered in Room 119 of CRB on January 28 to give good wishes to Thomas Jones (SSD), who retired January 31 after more than 29 years of service to GTRI. Harry Vann (SSD) began working as a student assistant with Jones in 1974.

"When I arrived, Tom, Steve Stephens, Maggie (Rampling) Harrison and myself were all of facilities management," Vann told those gathered at the reception. "Since then the Engineering Experiment Station (EES), and then GTRI, have grown. Tom has been unfailing in his sense of humor and his willingness to get things done for people out in the labs."

Carl Baxter (SSD) agreed. "I consider myself very fortunate to have worked for Tom all these many years," he said.

Since he began his career in 1965, when GTRI was known as the Engineering Experiment Station, Jones has served as head of employment services, research economist, assistant to the director, manager/facilities management, and has handled special projects.

"I love working at GTRI," Jones said after the reception. "The people, the intelligence — you are dealing with the upper 10 percent in society. I also enjoyed the freedom and the atmosphere. I've always enjoyed the work with top management."

Vann presented Jones with an honorary "Master's of 'Architorture'," which recognizes, among other things: his "ability to determine how many RS Ones can have offices on the head of a pin." and his legendary talent for moving concrete walls six inches to make room for several secretaries' plant collections.

Jones also was presented a framed wall hanging that includes photos of all the GTRI buildings he has managed during his career.

Other mementos included a fly swatter from the Baker Building shop; a Georgia Tech clock from Brenda Hill (SSD); and a Georgia Tech watch from Vann and Lynn Boyd. Harry Ross (SSD) # shared a 1971 photo of Jones with all the reception attendees and Jones' wife, Betty.

Jones' plans include part-time work helping the Economic Development Institute. He and his wife look foward to opening an antique shop in Canton, and are restoring a 1930s farmhouse.

Radar to the Rescue

Ben Wood fires his model rocket while the Doppler radar records the velocity of the rocket. Analysis showed the peak velocity produced by one rocket engine exceeded 175 miles per hour. (Photo Courtesy Gene Greneker)

Two students who won first place honors in their school science fairs worked with Gene Greneker (SEAL) and GTRI resources in developing their award-winning projects.

Chazaughn Purvis, 16, tested the hypothesis that the earth's gravitational pull has not changed appreciably since it was defined by Sir Isaac Newton. The son of Mr. and Mrs. Cornelious Purvis of Atlanta, Chazaughn won the science fair competition at Benjamin E. Mays High School and is a MAGNET program
Honors student.

Last year he won a blue ribbon in his school's science fair by building a Doppler homodyne radar with help from GTRI. This year he used that radar to measure the velocity of a 16 mm sphere dropped off of the Cobb County Research Facility's antenna range tower.

He recorded the Doppler produced by the falling sphere and then used a fast Fourier transform analyzer to convert the time domain radar signal into a series of Doppler frequency domain plots. Next he converted the frequency domain plots into velocity plots. As a result, he showed that the gravitational constant was still within one percent of that defined by Newton. Chazaughn will next enter the Atlanta City science fair competition.

Benjamin Wood, 13, won the physics competition at Glenn Middle School, St. Simons Island. The son of William and Linda Wood, he used a computer program to model the predicted acceleration of a model rocket design using three different engine sizes. He then used Doppler radar to measure the acceleration of the rocket as a function of time. The rocket's Doppler signals were recorded and then converted to velocity plots using the Fast Fourier transform process.

When he analyzed the data, Benjamin found that the design program was very accurate for two sizes of the engine that he used, but not for the third. He attributed the difference to drag, induced by tape used to repair his rocket after the parachute failed on a flight before the third engine was tested. Benjamin next enters regional competition with his project.

PPC Wins Awards in Georgia Competition

By Lea McLees, RCT

Georgia Tech's Printing and Photographic Center (PPC) won two awards in the 1993 Print Excellence Competition sponsored by the Printing Association of Georgia, Inc. (PIAG).

PPC brought home an Award of Excellence for Small, Non-Process-Color Booklets for its production of the *Economic Development Institute Directory.* Best of Category was awarded in the Non-Process Catalogs group for *Preparing You for a World of Change*, a publication describing computer classes and programs offered through Continuing Education.

The awards, presented at the January 15 PIAG Celebration of Print banquet, are the result of a team effort, says PPC director Paul Thomas.

"A lot of hands at PPC touched these publications through the entire process," he said.

The award-winning publications were among 950 printed pieces entered in the PIAG contest. This is the first time PPC has entered its work in competition.

PPC produces some 600 printing jobs per month for employees around campus. The center is automating its entire production process by installing a printing management system.

"We're confident the system will help us manage jobs for our customers from start to finish better than we ever have before," Thomas said. "We've also upgraded equipment in the last few years. We have the latest Macintosh computers, the latest versions of the top desktop publishing software packages, and the highest quality output technology in the industry."

Advanced planning of your printing job with PPC is an important part of getting it completed when you need it as you need it. If you would like to know more about PPC's printing capabilities and schedules, you may call 894-3570.

IEEE

From page 1

currently employed at GTRI: Ed Reedy, (RO), Johnson Wang (SEAL), Jim Wiltse, principal research engineer emeritus; Donald Clark (SEAL), and David Flowers (ELSYS).

Many of McMillan's achievements have been related to phase-locking radars, which illuminate objects and see their reflections, and radiometers, which see emissions of objects, in the 40 to 340 GHz range. Phase-locking reduces minute variations in frequency, leading to highly accurate measurements of physical phenomena. In one project, for example, McMillan used a 225 GHz pulsed coherent radar to detect returns from a running truck engine, despite the fact that the truck itself was not moving. At such high frequencies phase-locking is very difficult. McMillan also developed a theory to explain the observations and errors that result from phase-locking.

This work offers one main advantage, McMillan said.

"When the source can be phase locked you can use a very narrow bandwidth," McMillan said. "That uses less of the spectrum, so you can put in more channels."

Among the areas phase-locking could be applied to are Doppler radars, electronic communication, spectroscopy, laser technology and solid state physics. Phase-locking also helps astronomers measure accurately the frequency of transitions in the stars and galaxies.

As a result of his phase-control work, McMillan colleagues made the first carefully instrumented atmospheric turbulence measurements in the millimeter wavelength range. Other achievements include building a millimeter wave synthesizer that covers a full waveguide band; designing and building quasi-optical components; and measuring the spectroscopic properties of potential new laser materials.

He is currently leading work on the first 95 GHz combined radar/radiometer, which will simultaneously generate images based on reflections and emissions. One of his future goals is increasing his understanding of angle of arrival — the direction in which reflections or emissions are picked up by a radar or radiometer.

McMillan also would like to build a temperature sounding radiometer based on a theory of horizontal atmospheric temperature sounding he developed. Radiometers can measure temperature by detecting emissions. McMillan proposes that they be used to detect the quick temperature changes associated with windshears and atmospheric turbulence that can cause plane crashes.

In all of these areas of work McMillan acknowledges the contributions of his colleagues at Georgia Tech.

"They're all the best," he said.

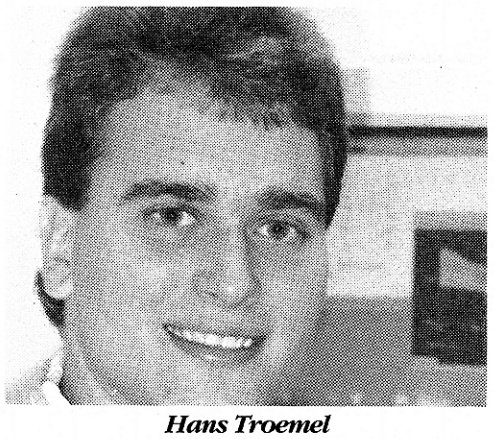
McMillan is proud of his family, as well as his scientific achievements. He and is wife, Ann, a student health nurse at Emory University, have been married for 38 years. He has three children and five grandchildren.

GTRI Greetings!

Welcome to some of our newest employees.

Ten Good Things We Know About Hans Troemel

1. Hans is a graduate co-op student who will finish his master's degree in electrical engineering in 1995.
2. He was an undergraduate co-op for GTRI in the Electronics Research Building, and for RIDL at Cobb County while completing his bachelor's in electrical engineering. He is new to SDL this quarter.
3. Hans' current work involves updating hard-to-find parts of old circuit parts to today's standards.
4. Seeing a circuit function correctly after he has worked on it is one thing Hans likes about his work.
5. He also likes the idea that much of electronics is still like magic — we don't completely understand how it works.
6. Hans enjoys RF communications; his specialty in this area is high frequency hardware design. He also enjoys working with digital, as well as analog, hardware.
7. If you are a Tech basketball fan, you've probably seen Hans — he plays trumpet with the Tech band in the Coliseum.
8. When he has free time (which isn't often, he says), Hans likes to camp, hike, sail, and provide a listening ear to his friends.
9. Hans and chemical engineering student Wendy Windsor are engaged to be married in August.
10. Hans comes from a family of engineers, albeit in a different area: His father, Hans Sr., is a civil engineering professor at Southern Tech, and his brother David is studying civil engineering at Tech. His mother, Bonnie, is a former kindergarten teacher.



Hans Troemel

Ten Good Things We Know About Emily Sears

1. Emily is a research engineer in ELSYS. She also has worked as a graduate co-op and graduate research assistant in that lab.
2. Emily earned an associate of science degree in physics from Gainesville College, and a bachelor's in electrical engineering from Tech.
3. She is working on her master's in electrical engineering right now.
4. Her job at GTRI is developing a translator program that converts assembly code from an outdated avionics microprocessor to assembly code for a modern, in-house designed replacement system.
5. Emily likes working at GTRI because she is learning lots of new things, and the work is always challenging.
6. Great colleagues also make working at GTRI lots of fun, she says.
7. Emily is considering going on for her Ph.D. in electrical engineering once she finishes her master's.
8. A Georgia native, Emily grew up in Buford and still lives there. She has a two-hour round trip commute to Tech each day, which she says is not bad because she gets an early start.
9. Emily's dad is Bud Sears, CAD division chief. They carpool when their schedules permit. Her sister, Susan, will transfer from Gainesville College to Tech this summer, and her brother, Wes, is currently in school at Gainesville College.
10. Right now Emily's free time is taken up planning a November wedding to fiance Dave Warlick, who is in his second year of medical school in West Virginia.

Emily Sears

Profile & Insight

Focus on Folks

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Professional Activities

Administrative Information Services Team

Tony White presented "A Client-Server Database Implementation Using A TCP-IP Network" to the Southeastern Oracle Users Group (SEOUG) during December 1993 in Atlanta.

Aerospace Laboratory

Krish Ahuja and graduate students **Kevin Massey** and **Jeff Mendoza** attended the 32nd Aerospace Sciences Meeting, January 10-13 in Reno, Nev. Ahuja chaired the "Jet Noise" session. Massey presented a paper coauthored with Ahuja, et.al., entitled "Screech Tones of Supersonic Heated Free Jets."

Marilyn Smith, **Ahuja** and student **Alex Fleming** authored a paper presented at the 32nd Aerospace Sciences Meeting, Jan. 10-13, in Reno, Nev. The paper was titled " Computational and Experimental Simulations of Tiltrotor Configurations in Hover."

Electro-optics, Environmental and Materials Laboratory

John Nemeth and **Nancy Davis** attended the annual meeting of the Hazardous Substance Research Center (HSRC) # Directors. Davis was presented the HSRC Directors Award from the U.S. Environmental Protection Agency for her work in technology transfer for the centers.

Carol Foley has returned from one year as a Fellow at the Army Environmental Policy Institute.

Paul Schlumper gave a presentation on OSHA regulations at the Georgia Golf Course Superintendents Association Seminar in January.

Information Technology and Telecommunications Laboratory

At the invitation of the German and United Kingdom governments, **Bobby Wilson** and **David Poskevich** gave a briefing on the GTRI approach to Foreign Materiel Exploitation and Analysis. The briefing was part of a meeting held in Munich, Germany, Jan. 10-14.

Next Month:

Meet the instrumentation and calibration experts at GTRI.

•••

Learn how to keep your computer secure.

•••

Look for a list of all post-reorganization department, lab and office abbreviations and what they stand for.

Personal Notes

Congratulations!

Delora Gould (SSD) welcomed her first granddaughter, Mary Elizabeth Atkins, on December 24.

Abbie Hendricks (FSD) welcomed a new grandson, Andrew Michael Callicott, on January 13.

Richard Truly welcomed his fifth grandchild, Annie May Rumbles, on February 4.

Fellows Want to Hear Your Thoughts

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.

In order to most effectively serve that purpose, the Fellows invite continued comments and specific suggestions relating to improving the research enterprise at GTRI. You may contact any of the Fellows directly:

Krish Ahuja	AERO	528-7054
Larry Corey	SEAL	528-7156
Devon Crowe	CS	4-3500
David Flowers	ELSYS	4-7195
Bill Rhodes	EOEML	4-2929
Chris Summers	EOEML	4-3420

Events of Interest

For more details on the Office of Information Technology classes listed below (designated by OIT), you may call 894-4660 or drop by room 140/Rich Building.

March 2
Introduction to Unix, 1-4 p.m., Rm. 239/ Rich. OIT

March 3
"Manufacturing and Information Technology," 3:30 p.m. reception, 4 p.m. lecture, Rm. 16/College of Computing. Presented by Raj Reddy, Carnegie Mellon University. Part of the College of Computing's Distinguished Lecture Series.

March 8
Introduction to Multimedia with Macromedia Director, 1-4 p.m., Rm. 239/ Rich. OIT

March 10
"Expertise, Performance and Problem Solving Across Domains, " noon, Rm. 102/ MiRC (Pettit Building). Presented by Beth Meyer, School of Psychology. Part of the Graphics, Visualization, and Usability (GVU) Brown Bag Lunch Series.

March 17
GVU Demo Day, 1:30-5 p.m., College of Computing. All welcome. Refreshments served.

Personnel News

Administration Information Systems Team

Three new co-ops begin work this quarter: **David Garrett**, **Kimberly Pullen**, and **John Butler**.

Electronic Systems Laboratory

A new co-op for winter quarter, **Brad Dixon**, has joined the lab.

Co-op **Brian Lowry** has terminated.

Systems Development Laboratory

David Veazie has terminated.

Support Services Department

Tom Jones has retired.

Thank You!

... to student assistant **Ravi Naidu** (RS&F) who helped with THE CONNECTOR this month while our usual graphics guru, **Charlotte Doughty** (RCT), worked on the *GTRI Procedures Manual.*

... and to the following GTRIers who have begun collecting CONNECTOR news from their respective service groups: **Ann Dunehew** (ELSYS); **Delora Gould** (SSD); **Gay McLarin** (PST); **Lee Hughey** (AIST); **Jenny Tate** (RSD); and **Joanna King** (MAPS), who also gathers CONNECTOR items from the Baker Building employees.

Robert G. Shackelford Graduate Fellows

Jeff Cronkhite (EOEML)
John Davis (ITL)
Ursula Donatto (EOEML)
Khalid Elibiary (ITL)
Arthur Fleming-Dahl (ITL)
Joseph Foraker (EOEML)
Harold Forbes (ITL)
David Forrai (EOEML)
Darrell Gerber (AERO)
Scott Goldstein (SEAL)
Steven Habermas (EOEML)
Marquis Jones (ELSYS)
Thomas Krygowski (EOEML)
Devendra Kumar (ELSYS)
John Messenger (EOEML)
William Ogle (EOEML)
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Tuyen Tran (EOEML)
Jarvis Washington (EOEML)
Regina Hardin (EOEML)
James Xu (EOEML)
Denver York (SDL)