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The WHISTLE



The Georgia Institute of Technology

Faculty/Staff Newspaper Volume 22, No. 26

July 20, 1998

Oliverio's *StarChild* turns golden

Shelley Hughes
Institute Communications and Public Affairs



Photo by Laurie Shane

Oliverio recently won an Emmy for his multimedia opera *StarChild*.

Composer James Oliverio has a new addition to his mantle—a statue dressed in gold. Far from a mere knickknack, his most recent Emmy Award joins four others adorning the mantle in his home. Oliverio, whose multimedia opera *StarChild* received two Emmy Award nominations, was recognized in June by the National Academy of Television Arts and Sciences with an Emmy for Excellence in Music Composition.

Oliverio is composer-in-residence and associate professor of music in the College of Architecture, where he teaches and does research in music and multimedia technologies. "I'm honored that *StarChild* has received such special recognition. The production at Georgia Tech was a fantastic collaboration between dozens of artists, scientists and technicians, as well as more than 100 students in special topics classes. And, the cooperation that we received from Georgia Public Television in getting it on the air was also quite gratifying," said Oliverio.

StarChild had its world premiere performances at the Olympic Village prior to the opening of the 1996 Games. It was subsequently taped and specially edited for television by Oliverio in coordination with Georgia Public Television (GPTV) and Dystar Television. The GPTV broadcast also was honored with a nomination for Excellence in Cultural Programming.

The *StarChild* Emmy is Oliverio's fifth, with previous awards resulting from his work for WTBS, Dystar Television and the soundtrack for the film *Time and Dreams*, which was commissioned as part of Atlanta's original bid to host the 1996 Olympic Games.

Last September, Oliverio began work as the director of the new Graphics, Visualization and Usability Center's AudioLab, within Tech's Georgia Center for Advanced Telecommunications Technology. AudioLab is currently conducting research on real-time software synthesis using technologies initially developed at the Massachusetts Institute of Technology and funded by DENON Nippon Columbia. Oliverio also was principal investigator for research involving synthesis of the singing voice, in collaboration with Mark Clements and Mike Macon of the Digital Signal Processing Department in the School of Electrical and Computer Engineering. Texas Instruments recently applied for a patent based on this work. Last year, it was featured at the national conference of the Audio Engineering Society in New York on a panel chaired by electronic music pioneer Robert Moog.

Faculty test online teaching tools

Denise Noble
Institute Communications and Public Affairs

Instructors know they're fully immersed in the computer age when they post quizzes on the Internet instead of hand them out in class and "double click" to access students' computer-calculated quiz grades.

The software package that puts these and other course management capabilities at instructors' fingertips is called WebCT and is available to members of the academic faculty through the Educational Technologies Directorate (ET) of the Office of Information Technology. Instructors can choose from a collection of WebCT software tools to support their teaching plan. These tools can be used to create courses that are solely online or to publish materials that supplement existing courses. While the software provides the structure, educational tools and administrative tools, faculty can concentrate on the content of the course.

WebCT equips the instructors with:

- the ability to custom design the look and feel of the course (e.g., color schemes, content organization, page layout);
- educational tools to facilitate learning, communication and collaboration (e.g., course bulletin board, searchable image archive, timed online quizzes, course calendar, student presentation areas); and
- administrative tools to assist in course delivery and design (e.g., student management, tool integration, questionnaire delivery).

Faculty members tested this software in more than 20 classes during the spring quarter, including: chemistry; computer engineering; computer science; electrical engineering; history; foreign

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The Whistle to adopt summer schedule

During the month of August, *The Whistle* will adopt a bi-weekly production schedule. Look for August issues on the 10th and 24th, then weekly issues through the academic year starting Sept. 6. Your feedback will determine whether an official "summer schedule" will begin next year, with bi-weekly publication from mid-June to mid-August. A survey asking your opinion on this and other topics will be printed in September.



GEORGIA TECH LIBRARY

New Regents take in Tech's sites

Lynn Durham
Government Relations

Georgia Tech put its best foot forward earlier this month for three new members of the Board of Regents: Shannon L. Amos, David H. "Hal" Averitt and Hilton H. Howell Jr. The



Photos by Stanley Leary, Georgia Tech Communications and Public Affairs

The regents' visit included a campus tour and demonstrations of research projects by faculty and students (from left: Hilton H. Howell Jr., Shannon L. Amos, President Clough and David H. "Hal" Averitt).

regents spent the afternoon touring campus and learning more about Tech's unique mission and role within the University System.

The Board of Regents of the University System of Georgia is responsible for the administration of the state's 34 public colleges and universities. It is composed of 16 members, one from each of the 11 congressional districts and five at-large members. The governor appoints members for seven-year terms.

Amos represents the third congressional

district on the Board and resides in Columbus. She earned a degree in early childhood education from the University of Georgia and is an active volunteer in community, cultural and educational endeavors.

Averitt also is a University of Georgia graduate and represents the first congressional district. He is the mayor of Statesboro and president of Sea Island Bank.

Howell is an at-large member of the Board and resides in Atlanta. He is president and CEO of Atlantic American Corporation and holds a B.A. and J.D. from Baylor University and an MBA from the University of Texas.

The Office of Government Relations invites each regent to campus during their first year of service on the Board so they have a bet-

ter understanding of Tech's mission, goals and needs. "As the governing body of the University System institutions, it is essential that each regent visit campus so they can see first-hand the dedicated faculty, staff and students who make this such a unique institute of higher learning," said Government Relations Director Andrew Harris.

The regents' visit began with a luncheon that included President Wayne Clough and Provost Mike Thomas, as well as several students. They were given a brief introduction to Georgia Tech including its facilities—old, new and proposed—its master plan and the success of the Capital Campaign.

After lunch, the regents were given a driving tour of campus. Special attention was paid to construction sites for the Manufacturing Related Disciplines Complex Phase II and the Institute of Bioengineering and Biosciences building. Also included in the tour was the Aquatic Center, new residence halls and the Georgia Center for Advanced Telecommunications Technology.

Although it is important for the regents to see the campus, it is vital that they have the opportunity to meet some of the researchers, faculty, staff and students. The first demonstration of the afternoon was given by Bill Ditto, an associate professor in the School of Physics, and his team of researchers and students. Ditto is using the principles of Chaos Theory to find ways to suspend heart attacks by implanting a device in the chest, similar to a pacemaker, that would send pulses to the heart to slow the beat if fibrillation (erratic heart rhythms) occurs. (See story on page 3.)

"I had no idea that sort of medical research was taking place at Georgia Tech. It was very impressive," said Averitt.

Next was a presentation by Mike Ropp, a Ph.D. candidate in the Center of Excellence for Photovoltaics Research and Education. The regents were particularly impressed with the work being done to make photovoltaic cells more affordable. When the solar-powered cells become more widely used in place of electricity, air pollution may be reduced.

Lastly, Cedric Stallworth, managing partner in OMED and a Georgia Tech alumnus, shared with the regents the impressive work being carried out by OMED to help minority students succeed at Tech.

Howell remarked that it was helpful for him "not only to gain a familiarity with campus but to have the opportunity to learn a great deal about the research taking place at Tech. We know that it's going on, but we didn't have first-hand knowledge of it. The visit was very helpful and I enjoyed all of it."

Teaching tools, continued from page 1

languages; literature, communication and culture; management; and philosophy of science and technology.

George McKelvy, demonstration teacher in the School of Chemistry and Biochemistry, used the software last spring in a trial run for Chemistry 1112. According to McKelvy, one of the greatest advantages is the immediacy of information to and from the students. "Take, for example, a class that meets Tuesday, Thursday and Friday mornings. Friday afternoon the instructor thinks of something [the students] need to know for Tuesday's class. He can write a message on the online bulletin board, which gets the message out to all students simultaneously." Students also can post questions to instructors—in chat rooms or on the bulletin board—as they are working on an assignment and receive a response without having to wait until the next class period.

One of the tools McKelvy has used most is the quiz function. "The students can take the quizzes from anywhere. If they're [across the country] and they have Internet access, they can take the quiz for next week's lab." Of course, this remote access setup also means that students may potentially 'share' information. "That probability is always there," he said. "All we can do is try to encourage them that it is not to their benefit. They'll end up coming to lab and having trouble because they don't know what they're doing or they'll do it incorrectly."

One feature coming in the next several weeks will help students prepare for labs. "[The students] will be able to look at pre-lab videos, which are instructional materials showing them what they'll be doing in the lab, what the setup looks like and the types of calculations they'll be using to write the lab report," said McKelvy. They will have all of this information prior to coming to lab."

The success of the software will be measured in three ways—two faculty-based and one student-based—according to ET Director Steve Teal. "First will be an ongoing assessment as we ... work with faculty members on implementing it in their classrooms," Teal said. To help accomplish this end, ET created a Georgia Tech WebCT list-serv. Faculty surveys at the end of each quarter are the second measure, and the third will use Flashlight, an education technologies assessment product from the American Association of Higher Education, which helps evaluate students' perceptions of WebCT and other educational technologies. McKelvy's students already have provided feedback informally by talking with the teaching assistants, and so far, the student response has been "very positive."

The inevitable question is whether technology will take over the teaching of courses to the point where students don't need to attend class at all. "There are some institutions where they teach entire courses using WebCT," said McKelvy. "The University of Illinois teaches an organic chemistry class purely on the Internet. That's the ultimate in distance learning." So far, Georgia Tech faculty use the software as a supplement to a class, and in McKelvy's opinion, "it will enhance but in no way replace the upfront instruction."

The Georgia Tech license is for a single server with unlimited users. The software will be hosted on classweb.gatech.edu, the campus academic Web server. ET will provide technical support for WebCT, while user support and training will be provided by staff from ET and the Center for the Enhancement of Teaching and Learning.

WebCT accounts can be created for any instructor wishing to use or try the software. Course accounts are already being created for fall quarter courses. Registration, information request forms, training schedules and further informational material can be found at webct.gatech.edu.

Information and pointers to non-WebCT-supported courses using the central campus academic server as well as other software tools can be found at classweb.gatech.edu. The materials developed for the trial courses in the spring and summer quarters can be found online at webct.gatech.edu.

WebCT introductory workshops

To register, contact Clint Lyle, Educational Technologies, 894-6294 or clint.lyle@oit.gatech.edu. For a schedule of advanced workshops, see webct.gatech.edu.

Introduction to WebCT

July 22	10:30 - 11:30 a.m.	Skiles 354
July 22	1:30 - 2:30 p.m.	Skiles 354
July 27	10:30 - 11:30 a.m.	Skiles 354
July 27	1:30 - 2:30 p.m.	Skiles 354
July 28	10:30 - 11:30 a.m.	Rich 209

Getting Started with WebCT

Aug. 4	9 a.m. - noon	811 Marietta
Aug. 10	9 a.m. - noon	Skiles 354
Aug. 24	1 - 4 p.m.	Skiles 354

Georgia Tech

The Whistle

Editor-in-Chief: Denise Noble

Published by Institute Communications and Public Affairs.

Publication is weekly throughout the academic year.

The Whistle can be accessed electronically through the Georgia Tech Web page, or directly at www.whistle.gatech.edu.

E-mail Whistle submissions to denise.noble@vpea.gatech.edu, or fax to Denise at 894-7214, at least 10 days prior to desired publication date. For more information, call 894-8324.

All phone numbers listed in The Whistle are in the 404 area code unless otherwise indicated.

Cost/\$350 Copies/4,500

Institute Communications and Public Affairs
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Atlanta, Georgia 30332-0181

Georgia Tech is a unit of the University System of Georgia.

High-speed 'movies' reveal clues to causes of sudden cardiac death

John Toon
Research News and Publications

Ventricular fibrillation kills thousands of Americans each week by inducing abnormal electrical signals that turn their hearts into quivering "bags of worms" no longer able to pump blood. Victims die within minutes, unless the erratic heart rhythms can be halted with massive jolts of electricity from a defibrillator.

Medical researchers now have moved one step closer to understanding the causes of ventricular fibrillation through a remarkable series of high-resolution movies that clearly show how the condition disrupts the electrical signals that normally govern the heart. The unique high-speed imaging system produced for the research also revealed for the first time that ventricular fibrillation may develop in two distinct phases.

"We have now seen the smoking gun of fibrillation," said Bill Ditto, a physics professor at Georgia Tech and one of the study's co-authors. "We now have evidence of what is going on. This dramatically increases the possibility that we could develop a new defibrillator or improve existing defibrillators."

"Sudden cardiac death kills more Americans than anything else," said Francis Witkowski, the study's lead author and a professor of medicine at the University of Alberta in Edmonton and a medical scientist of the Alberta Heritage Foundation for Medical Research. "The median age is 59, so these are not people who are very old. This often happens with people who are suffering a first heart attack from which they could have recovered."

The movies reveal a series of unusual spiral waves that originate with "rotors" near the surface of the heart. The waves rapidly expand, flow across the heart muscle, merge and even interfere with each other, causing heart cells to contract in an uncoordinated way.

Knowing how these unique waves form and behave could provide the information needed to design and test control techniques that may provide an alternative to existing defibrillators—which deliver the electrical equivalent of "a bowling ball dropped onto your chest from a two-story building."

Because the spiral waves seem chaotic in their behavior, researchers hope they can apply newly discovered chaos control techniques to restore normal heartbeat. Instead of the massive jolt of electricity, the chaos control technique might bring the heart back into normal rhythm using carefully applied electrical signals of much less energy.

"The idea behind chaos control is that very small changes to a truly chaotic system dramatically change its behavior," Ditto explained. Reducing the amount of energy could also allow defibrillators—both portable devices used by emergency medical teams and the implantable devices put into chests of people vulnerable to fibrillation—to be smaller and operate longer on their batteries.

Besides visualizing spiral waves in the heart, this study of canine hearts also showed that ventricular fibrillation goes through two distinct stages. That previously unknown information should also help improve control techniques.

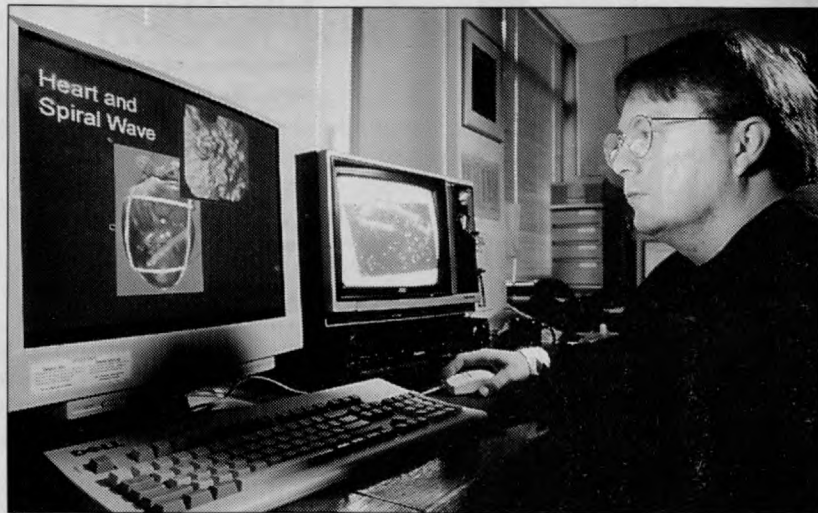
"The electro-physiology of the heart evolves in time as ventricular fibrillation develops, and that has implications for how we attempt to control it," said

Witkowski. "The initial form, which occurs in the first several seconds of ventricular fibrillation, is a different entity from what develops over time."

Medical researchers have long known that the longer the fibrillation episode lasts, the more difficult it is to stop. They had blamed that on declining blood flow in a fibrillating heart, but Witkowski says the newly discovered two-phase pattern suggests the explanation may be more complicated.

The unique imaging system used by the research team produces detailed information from as many as 16,000 points on a portion of the exterior surface of the heart. Operating at 838 frames per second, the system allows researchers to capture the rapid and disorganized waveforms for analysis.

The system relies on fluorescent dyes that respond to electrical changes in the cells of the canine heart muscle. Researchers expose the beating heart to high intensity lights, then image and intensify specific wavelengths of light returned



Physics Professor Bill Ditto studies spiral waves that originate near the heart's surface, expand and eventually cause heart cells to contract in an uncoordinated way.

by the dyes. Pioneered by Witkowski, who is also trained as an electrical engineer, the system produces images with improved resolution compared to earlier techniques.

The next step in the work is to try out chaos control techniques, using the imaging system to observe the effects. Once they find promising techniques, the researchers hope to try them on surgery patients whose hearts go into fibrillation on the operating table. The technique could also have application to atrial fibrillation, a less-serious disruption of the heart's atrium.

Sponsors for the work include the U.S. Office of Naval Research, the National Science Foundation, the Medical Research Council of Canada and the Alberta Heritage Foundation for Medical Research.

Web site structure reduces navigation frustration

Have you ever been frustrated at not knowing what lies ahead when you click a link on a Web site? Or worse yet, have you reached your cyber-destination only to see information completely different from what you expected?

Computer support staff members in the School of Electrical and Computer Engineering (ECE) have solved that problem by creating fly-over menus that use a Java application, or "applet," that "tells" users what they will find at a particular location.

When a user points a mouse at one of the ECE site's six main topics, a description of what will be seen appears in the bottom left corner of the ECE graphic box. When clicking on a topic that has an arrowhead to its left, a related, second menu of choices is displayed. When a user points at each of the options, descriptions of what lies ahead for the Web surfer appear.

Designed by John Lockhart, an ECE doctoral student, using the Java Development Kit from Sun Microsystems, the applet provides information on demand and keeps the Web site design free of excessive text and link options that make it difficult for a Web surfer to navigate a site. More importantly, according to Peter Flur, also a key designer of

this site, this reorganization allows the surfer to advance several levels deep into the ECE site without having to wait for pages to load at each level of the hierarchy.

"If you were looking for detailed information on a particular topic, you may have had to click through as many as six to eight pages before reaching your chosen destination," Flur said. "Using the new applet, that navigation can all be accomplished by only loading the ECE home page."

In addition to Flur and Lockhart, the Web site was reorganized and implemented by computer support staff members Lonnie Harvel, Kelly Schmidt, Max Lanier and David Webb; Associate Professor Steve DeWeerth; and Jackie Nemeth, ECE information specialist. For more information, contact Peter Flur, 894-4767.

Campus

EVENTS

Arts/Culture

Season, series and individual tickets on sale for the 1998-1999 First Class Season at Robert Ferst Center for the Arts. Individual tickets go on sale July 13. The lineup includes: Cortez & Co. contemporary dance; the Boys Choir of Harlem; "Two Pianos, Four Hands;" Moiseyev Dance Co.; New York City Opera National Co.'s "Madama Butterfly;" I Musici de Montreal; Penn & Teller; the Ahn Trio; Christopher Parkening; Zap Mama; and Neil Simon's "Rumors" at DramaTech. For information, call the box office at 894-9600.

Brown Bags/Lectures

July 21

Presentation on skin cancer. 11 a.m. - noon, Student Center, room 320. For more information, contact 894-2805.

Courses/Workshops

July 23

Personal Finance Seminar, Part I. Learn how to budget, manage your checkbook and save for a rainy day, regardless of your income. Instructor: Melvin Stephens, Consumer Credit Counseling Service. Free. 11 a.m. - noon, Student Center, room 320. Part II, July 30. Contact: 894-2805.

Miscellaneous

July 23

OPTIONS Coffee Break. Find out more about OPTIONS and how can you get involved. 11 a.m. - 1 p.m., Cyber Cafe Patio. Rain location: Cyber Cafe. For more information, contact 894-2805.

Upcoming

Leadership Georgia Tech, training weekend for alumni club officers. Sept. 10-12, Georgia Tech campus. For more information, call 894-0748 or 1-800-GT-ALUMS.

Homecoming '98, Oct. 16-17, Yellow Jackets to tackle Virginia. Contact: 894-2391 or 1-800-GTALUMS.

Parents Association's Family Weekend '98, Oct. 23-24. For more information and registration materials, call the Parents Association, 894-2732 or 1-800-GTALUMS.

Editor's Note: Calendar items should be e-mailed to denise.noble@vpea.gatech.edu or faxed to The Whistle at 894-7214 at least 10 days prior to desired publication. For more information, contact 894-8324.

Classifieds

APPLIANCES

Maytag automatic gas dryer. Ivory, 43" x 27". large capacity. Contact 894-2233 or terry.jones@gtri.gatech.edu.

AUTOMOBILES

1975 Ford F-250 pick-up truck. super cab. tow package. w/ topper. air. automatic. 84K miles. Moving, must sell. \$2,900. Call Janice. 894-3880 or 770-471-5705.

1981 Chevrolet van. AM/FM/cass. ps. pb. 305 V8. towing hitch. A/C not working. AT parking pin not working. Motor excellent condition. 176K miles. \$1,100. 770-778-9343 or bob.house@ee.gatech.edu.

1985 Toyota Camry. VGC in and out. 115K miles. 4-door. 5-speed manual. AC. PS. PB. AM/FM. cruise. \$2,400. Contact 299-5259 or tom.graver@marc.gatech.edu.

1985 Cadillac Eldorado. 4.1 I V8. 100K mi., automatic, power steering/windows/locks. AC. sentinel. AM/FM/cassette. 20 mpg. white/white w/ blue roof. \$2,950. Contact gte982f@prism.gatech.edu or 633-4168.

1988 Nissan Sentra. 5 speed, two door. A/C. 130K. \$1,300 OBO. Call 770-638-8589.

1990 Honda Accord LX. Auto, PW, PL, A/C, cruise. 175K miles. \$5,300. See <http://members.aol.com/Ajohns5639> or call 770-445-2206.

1990 Toyota Corolla DX wagon. \$4,500. Red. 4 door. auto, cruise control, new tires, new muffler, AM/FM/cassette. 104K miles. Call 894-6618 or 770-368-8575, or e-mail yhyun@ee.gatech.edu.

1992 Toyota MR2. 2 seater, 5 speed, T-bar roof, low 62K miles. CD. PS. PB. A/C. new tires. \$12,000. Call 770-928-7112.

1995 Acura Integra RS. Red. 5 speed, PW, PL. AC. sun roof. 42K miles. \$11,400, firm. Contact 252-5446 (h). 894-2401 (w) or leland.harper@conted.gatech.edu.

FURNITURE

Wanted: full-size futon mattress in good condition. Call 770-975-3794.

Daybed w/ mattress, black: \$150. Square coffee table, black/glass: \$45. Dinette w/ 4 chairs: \$50. Couch: \$90. Dorm-size refrigerator: \$75. Moving end of July, all prices negotiable. Contact he7@prism.gatech.edu.

King-size black leather water bed. Extended mirror in headboard with lights on both sides. Water mattress not included. \$50. Call Tonya. 770-259-6606.

Walnut curio case. \$250. Queen Anne dressing table/writing desk. \$200. Cherry butler's table, \$50. Two bar stools (orig. \$300 each), \$150. Storage/serving pieces, dishes, in Wedgewood Queens Plain, \$200. Call 261-1689.

Two-drawer wood filing cabinet, \$50. Breakfast table, 2-seater, bamboo/rattan with glass top, \$75. Contact Barbara, 894-7088, or barbara.totten@physics.gatech.edu.

Antique dressing table w/mirror \$75, pine dining room table w/ 2 ladder back chairs, \$75. Call Janice, 894-3880 or 770-471-5705.

REAL ESTATE

For sale: 3BR, 2BA house, Douglasville, close to I-20. Eat-in kitchen, large LR/DR combo, stone fireplace, quiet neighborhood. Possible room for expansion downstairs. \$89,900. Call Christine, 894-3193 or 770-489-6118.

Roommate wanted: Lithonia/Stone Mtn., \$600/month including utilities. No cats. Call Angela, 770-903-9646.

3 BR, 2 1/2 BA tudor style home. Huge master bedroom, fenced in yard, near bike path, great neighborhood. Off Hwy 78 between I-285 and Stone Mountain. \$122,900. Contact sue.dugan@iac.gatech.edu.

For rent: 4BR 3BA house, Riverdale. 2,430 sq. ft. \$1,200/month. Perfect roommate situation. Den, LR, garage, fireplace. E-mail carita.reynolds@mgt.gatech.edu.

Family of 5 looking for 3 to 4 BR rental unit. Up to \$650/month. E-mail cm132@prism.gatech.edu.

SPORTS/FITNESS/RECREATION

NordicTrac abworks exercise machine, new. \$100 OBO. Raleigh. 3-spd folding bicycle, fits in car trunk, \$50. Call Carol Thomas, 894-1747 or 770-451-1959 (eve).

MISCELLANEOUS

Kawai white piano (upright) \$2,500; desks \$40; hutch \$20; bookshelves \$25-40; beds \$30; roll-top desk \$85; breakfast table w/ 5 chairs \$150. Moving abroad. Contact rs70@acme.gatech.edu or 634-3692.

Four Goodyear Invicta 225/75-15 tires. New. \$300 for set. \$250 w/ student ID. 770-778-9343 or bob.house@ee.gatech.edu.

Bookshelf of Mary Kay cosmetics for half price. Must sell right away. Contact cecelia.jones@grad.gatech.edu.

Two nights for two at 10-acre Florida Bal Harbour Sheraton Beach Resort. \$150 (room, tax only). Good thru 10/31/98. Contact june.weddington@me.gatech.edu.

Peavey power amplifier/equalizer, \$250 OBO. Yamaha DX21 synthesizer, \$100. Black suit bag w/ shoe pockets, \$5. Panasonic microcassette recorder, \$10. Three 19" 2U rack mount project boxes, \$5. Call Chris, 315-7526.

Dog crate, 42" x 28" x 38", almost new. Original price, \$200; asking \$100. Girl's 3-speed bike, 26", almost new, \$65. Contact carol.jones@carnegie.gatech.edu.

The Club, brand new, easy to use, prevents anyone from turning steering wheel of car. \$20. Call 894-3758.

Editor's note: Faculty and staff may submit ads via e-mail to denise.noble@vpea.gatech.edu or fax to Denise at 894-7214. Ads run for a maximum of three weeks, in the order in which they are received. Please notify Denise when items have been sold. For more information, call 894-8324.