

the GTRI connector

Published monthly for employees of the Georgia Tech Research Institute

Volume 1 Number 5

March 1985

GTRI Occupies New Research Building

March has been move-in month on the research side of Georgia Tech. Most of the units to occupy the new Centennial Research Building moved in stages throughout the first three weekends of the month. A few minor moves will be accomplished later.

Who's Where

The ground floor contains the mechanical plant, the mail room, and several open bay areas that will be used for storage and other uses as needed. It probably will contain a small shop. The Research Software Training Facility will be moving there later.

The other five floors are designed to house 400-plus people, as follows:

2nd Floor. Office of the Vice President for Research; Georgia Tech Research Corporation; Office of Contract Administration; Office of Interdisciplinary Programs (also on 3rd floor); Office of the Director, GTRI; Research Communications Office (to move April 12).

3rd Floor. Biomedical Research Division, ECSL/GTRI; Georgia Tech News Bureau (date to be announced); an academic unit (to be determined).

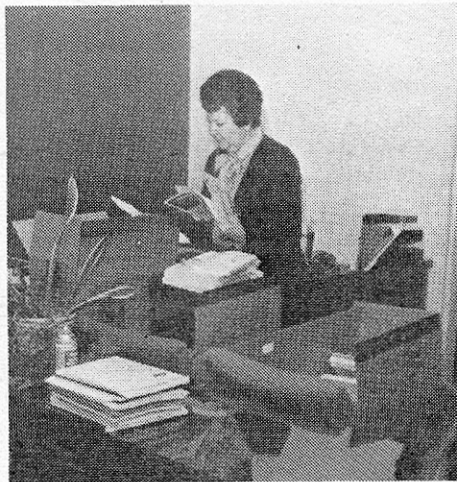
4th Floor. Defense Systems Division and Electronic Support Measures Division, SEL/GTRI.

5th Floor. MiniComputer Service Facility, GTRI; Modeling and Simulation Division, RAIL/GTRI; Countermeasures Development Division, SEL/GTRI.

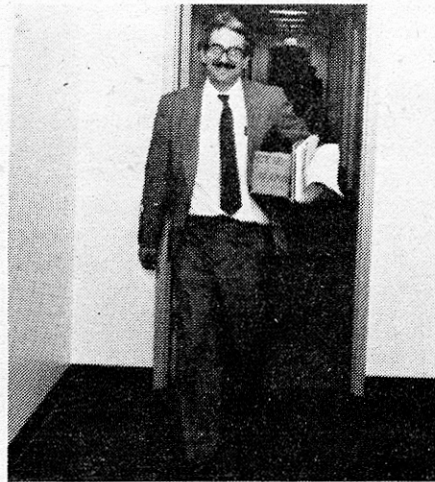
6th Floor. Concepts Analysis Division, SEL/GTRI; Office of the Director, SEL/GTRI.

According to Robert Hawkins, coordinator of the move, ECSL will expand into the space vacated by SEL in the Electronics Research Building, bringing its Electromagnetic Effectiveness Division over from Baker. EML and EMSL will consolidate units and expand in Baker. RAIL and STL will expand into some of the space vacated by SEL at the Cobb County Research Facility; plans for the remainder of the space will be announced later.

Facilities Management Manager Tom Jones has appointed Rusty Embry as building manager. He and a receptionist will be located at the ground-floor entrance of



Moving into the Research Building: (Left) Ann Mintz unpacks boxes as she settles into the GTRI/OOD area. (Right) Robert Hawkins, the efficient coordinator of the complex arrangements for the move, strides through the halls checking on progress.



Charles Haynes

the new building. There will be copying capability on every floor, and several laser printers will be installed. A lounge is located on the second floor.

The computer room on the fifth floor contains two minicomputers—an IBM 4361 and a DEC 780—and several intermediate-size computers—six Apollos and two Masscomps. A second DEC will be installed for classified copying as soon as a room can be built for it. Every room in the building has a port for connection to the campus ETHERNET. According to MCSF representatives, more than 100 persons will be connected initially, and great growth in this number is anticipated eventually.

The \$12.5-million brick and concrete facility is located at Tenth Street between Dalney and Greenfield. The entrance is on Dalney Street, nearly opposite the Baker Building. A formal dedication and open house will be held on May 7.

Parking

A 450-space gated parking lot is under construction immediately south of the building to accommodate the approximately 425 occupants and their visitors. It will have entrances and exits on both Dalney and Hemphill. The existing parking lot next to the building provides another 43 spaces, and microphone communication at the gate entrance will allow visitors to talk to a security guard inside the building. In addition to these two card-access lots, 150 more spaces are available on a first come, first served basis in the existing Placement Center lot.

Unfortunately, the larger

parking lot is incomplete. Weather permitting, the lot will be available for use by April 15. If the weather is uncooperative, completion may require several more weeks.

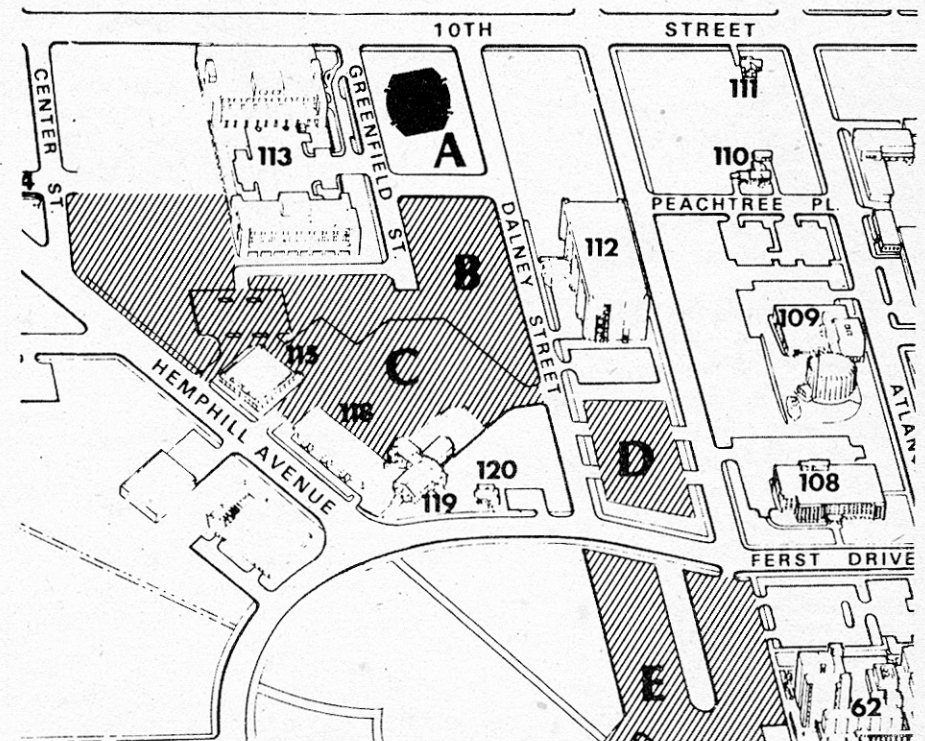
Campus Police Chief Jack Vickery said the lot will be accessible only by key card. There will be reserved spaces within the lot, and each request will be handled on an individual basis in conformity with standard campus practice. Persons now having reserved spaces who will not have them after they move can apply for a partial refund of their reserved parking fee, Vickery added.

According to Paul vander Horst, campus landscape architect in the Office of the Vice

President for Planning, "Construction will progress as fast as possible, weather permitting. The contractor has been working on the lot since mid-December. The required drainage system and underground water detention system have been installed, but the weather has been holding us up on paving.

"This is the worst time of the year to build a parking lot," vander Horst said. "The moisture content of the soil must be within a narrow range of tolerance for it to be compacted to proper density. If asphalt is laid on the crushed stone base over inadequately compacted sub-soil, the paving section will break up when the sub-soil compresses from automobile traffic. One day of rain can delay the contractor a week."

Vice President for Planning Dr. Clyde Robbins has identified 600 parking spaces which are available within reasonable proximity of the new building for temporary use until the parking lot is completed. In addition to the 43 parking spaces already built adjacent to the building, they are in the Placement Center lot, the lot at Ferst Street between Dalney and State, the Physics lot across Ferst Drive, and curbside parking on Dalney and State streets.



Site plan showing parking available near new Research Building (A). Key: B = Research and ATDC gated parking (under construction); C = Placement Center lot; D = Ferst-Drive lot; E = Physics lot. Building key: 62 = Physics; 108 = Electronics Research; 112 = Baker; 113 = ATDC; 115 = Placement Center; 118 = Police/Personnel/Parking. (From Official Campus Map)

Construction Starts on Cobb Antenna and RCS Ranges

Georgia Tech engineers are noted for their resourcefulness, and those in the Systems and Techniques Lab (STL) have become adept at getting something for nothing (a useful skill in these days of tight budgets). First, Bill Nolte managed to get a North Carolina manufacturer to donate more than \$1 million-worth of structural components from a giant windmill tower to Georgia Tech for use in building a far-field antenna range. Now, Bill Leverett has secured more than \$100,000 worth of land grading for the antenna and radar cross section (RCS) ranges free.

How? The Air Force Heavy Equipment School at Dobbins Air Force Base needed some land for its students to train on. They brought in their first group of students in early November 1984, and have been running two-week and four-week schools ever since. Besides slicing off the top of a hill and leveling a formerly steeply graded area, they have uprooted a mountain of tree stumps, demolished several empty houses, built a dam and sediment pond to catch water runoff, and accomplished a major portion of the grading necessary for the RCS ranges.

Bill Leverett did the site planning and design for the ranges that will be erected on the Cobb County Research Facility property—a 1300-foot far-field antenna test range, a 1500-foot heavyweight target RCS range, and a 500-foot scale-model RCS test range. Howard Atkinson is in charge of the construction phase; Pat Burns and Neal Alexander are overall task leaders for STL and RAIL, respectively.

The ranges will be used by STL, RAIL and other GTRI laboratories, as well as rented out to several high-tech companies. A 1000-foot full-scale RCS range and an instrumented radar test laboratory atop Building 5 are proposed future additions.

The 90-foot signal source tower and a turntable to support heavy vehicles undergoing RCS tests will be located at the southern end of the property, just off Dixie Avenue, which runs parallel to Georgia Highway 3 and the railroad. The 72.5-foot receive tower and the RCS range will be on the north side at the curve in Richardson Road near the turn-off to the Cobb County Research Facility.

Zenith Construction Company began work in early March on installing two tower foundations and erecting the 90-foot transmit tower. The

contract calls for completion by July 15. The Georgia Scientific and Technical Research Foundation (GSTRF) is funding this portion of the range work. The Georgia Tech Research Corporation (GTRC) is funding construction of the turntable, the scale-model RCS range, and the rooftop laboratory.

A six-inch conduit to house a fiber optic data transmitting cable and telephone lines already has been laid to link the towers. Again demonstrating STL employee resourcefulness, Lamar Carney has threaded the conduit with a pull rope by tying it to a toy remote control Corvette car. The rope will pull the cable through when the time comes.

Development of the new facility is of great importance to Georgia Tech, as more than half of the research performed in RAIL and STL deals with electromagnetic radiation test and evaluation for major units of the Department of Defense.

Volunteers Fix up Recreation House

Inspired by the land clearing and grading going on at the Cobb County Research Facility, several employees decided to renovate one of the three houses left standing, turning it into a recreational facility. Working on their own time, volunteers have knocked out walls, painted rooms, repaired water pipes, installed showers in separate men's and women's dressing rooms, and built weight benches. The GTRI Quality of Life Committee has purchased a set of weights for the weight room.

The house also is outfitted with exercise mats, as well as storage for bicycles and equipment for badminton, football, baseball, basketball and soccer. Eventually, a half basketball court will be built.

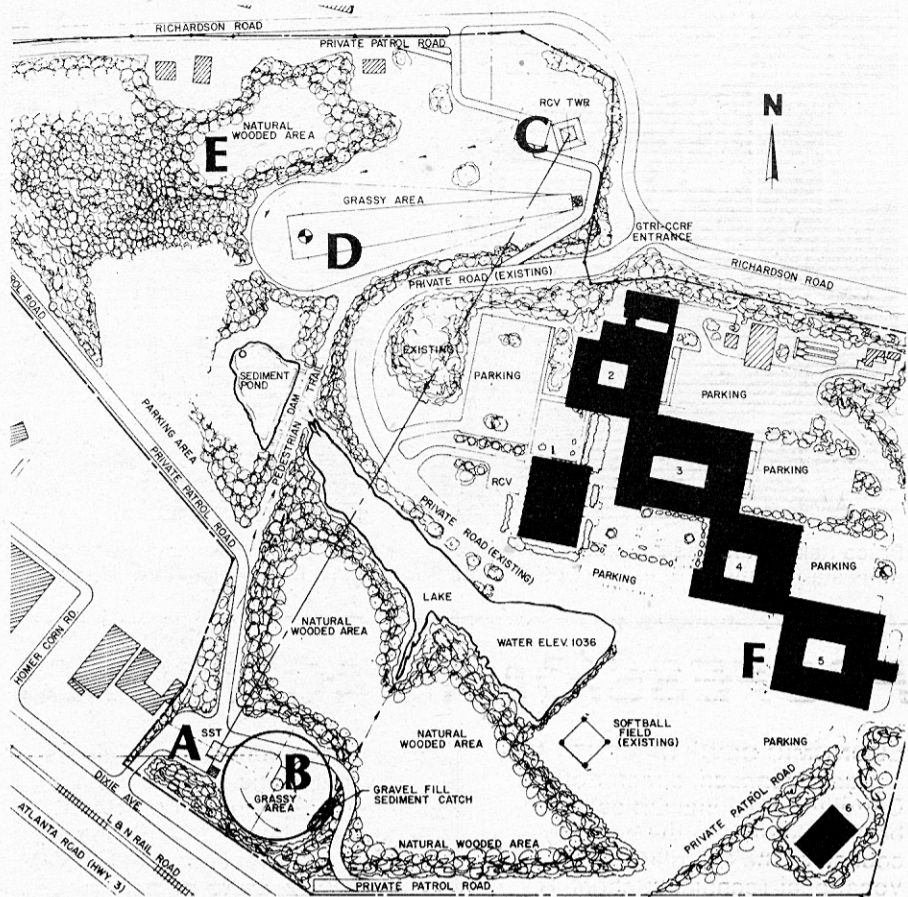
Vince Camp and Marty Hill of STL spearheaded the development of the Cobb County "Mini SAC."

Personal Notes

SYSTEMS & TECHNIQUES LAB

Mary and Luther Ward announce the birth of a daughter, Karie Rene, born March 4.

Conrad Meaders wishes to thank all his friends in GTRI, especially at STL in Cobb County, for their "prayers, flowers, personal expressions and visits to the hospital and funeral home" on the occasion of his father's stroke and death on February 22.



Site plan of antenna and RCS ranges at Cobb County Research Facility. Key: A = transmit tower for full-scale antenna range; B = turntable for heavyweight target RCS range; C = receive tower; D = scale-model RCS range; E = site of future full-scale RCS range; F = site of future rooftop radar lab. (Drawing by STL Design Services)



An Air Force Heavy Equipment School student works on the sediment pond dam at the Cobb County far-field antenna range site. An exposed section of the six-inch conduit for the data link can be seen at the bottom of the photo.

New X-Ray Analyzer Available

The Materials Characterization Branch is the proud owner of a new energy dispersive x-ray microanalyzer. Used in conjunction with the scanning electron microscope, the analyzer provides computer color graphics displays showing what elements are present in the sample and relative quantities of each element. The equipment will find particles, tell their size, and sort them according to elements present and their size.

"The technique is based on the fact that when an electron beam hits a sample, x-rays are given off," explains John Sparrow, who operates the equipment. "A detector collects the x-rays and an analyzer sorts them out according to energy. X-ray peaks occur at different

energies for different elements, and the height of the peak indicates the quantity of that element."

The Tracor Northern x-ray analyzer features innovative integration of five state-of-the-art microprocessors and a comprehensive library of applications programs. Among its many special capabilities are the ability to pan and zoom on digitally collected images, and the ability to perform digital stereo microscopy. A printer/plotter provides high-speed, report quality graphics output.

Anyone interested in microchemical characterization of material samples using the new equipment should contact Dr. Garth Freeman or Dr. John Sparrow at 894-3460.



Bruce Rakes (left) and Joe Gagliano (right) were among 21 GTRI personnel who took turns staffing the GTRI exhibit booth at the Southcon/85 Electronics Show March 5-7.

Charles Haynes

Tuition Grants Enhance Research Staff Capabilities

In the decade since the Tuition Reimbursement Program for Georgia Tech research staff was started, its utilization has increased dramatically. In the 1975 Fall Quarter, 27 applicants signed up; by Fall Quarter 1984, the number had grown to 96.

The program is the most popular of several staff development programs funded by the Georgia Tech Research Corporation (GTRC) to help the research staff develop, sharpen or broaden their professional skills and capabilities. It has provided the edge that enables GTRI to attract outstanding young researchers, and it has helped middle and senior level staff members of long service enhance their value to Georgia Tech.

Bill Howard, who administers GTRI's participation in the program with the assistance of Marianne Thompson of PSD, puts the rationale this way: "Georgia Tech has one principal commodity to offer—the competence of the professional staff. If we set a standard of excellence for ourselves, then we must not only try to recruit and hire the very best people, but we must also help them maintain and improve their technical skills, add new skills, increase their sense of professionalism, and create a sophisticated awareness of matters of broad public concern."

Any permanent, full-time research faculty member with graduate degree objectives closely related to the individual's field of research and attending an approved college or university may apply for tuition reimbursement up to a maximum of six hours per quarter. The application must be submitted prior to registration, and the reimbursement request is submitted at the end of the quarter, along with a transcript of grades and proof of payment of fees. The applicant must have the approval of his/her supervisor and laboratory director.

Participant Profile

Although the program is Georgia Tech wide, most of the participants are in GTRI; for instance, 292 of the 313 participants in the 1978-1984 period were GTRI employees, according to statistics compiled by Howard. "When we look at figures on persons who are still active in the program (have participated in the last two years), we find that 115 out of 128 are from GTRI," Howard said.

Most (92%) of the 128 total participants in the past two

years are on the research (engineer, scientist, technologist, or associate) I and II levels and have less than six years of service. Some 114 of the 128 are enrolled at Georgia Tech, including 75 pursuing advanced degrees in electrical engineering. There are 104 persons currently working on master's degrees and 24 pursuing doctorates.

GTRC's expenditures for tuition reimbursement have risen from \$17,063 in 1978-79 to \$48,587 in 1983-84. This reflects not only the increasing enrollment, but also the fact that tuition costs per quarter hour have doubled during the period.

Other Programs

Although not so widely known and used, GTRI offers several other programs conducive to continuing self-education and professional development. One is fellowship stipends for research-titled members of the general faculty nearing completion of doctoral study programs at Georgia Tech. GTRC will provide fellowships of up to one-year duration to persons who have been full-time employees for three years and who only need released time to do their research and dissertation. The stipend will equal one-half the current annual salary of the applicant plus tuition and some fringe benefits. However, the person must concentrate **full time** on dissertation research.

Another GTRC program encourages staff members to participate in the activities of professional organizations in their areas of expertise. Staff members who provide national or international leadership in an elected or appointed position are eligible to apply for reimbursement of expenses such as domestic travel to attend meetings which cannot be covered by the professional organization. Other staff members may apply for funds to attend the annual or biennial conferences of professional organizations of which they are members, provided they have not been reimbursed previously through Georgia Tech for attending a conference held by that organization.

GTRC also provides supplementary funds for foreign travel to attend international research conferences, to pursue sponsored research development activities, or to enhance research programs at Georgia Tech.

(Note: To learn more about these staff development programs, please read pages D1-D7 of the *Faculty Handbook*.)

PROFESSIONAL ACTIVITIES

ECONOMIC DEVELOPMENT LAB

Harris Johnson, director of the Carrollton Regional Office, has been appointed to the advisory council of the Carroll County Vocational-Technical School. He will provide guidance in equipment selection and program development in the area of automated machine technology.

In February, William Spain, Bill Ewing, and Eva Clay presented short courses on respiratory protection and operations and maintenance planning at the National Asbestos Council's Asbestos Abatement Exposition in Dallas (TX). Spain and Ewing are serving their final year on the National Asbestos Council's board of directors. They also participated in a "blue-ribbon" asbestos workshop in Baltimore (MD) in March. The small, select workshop was assembled by Dr. Morton Corn, former head of the federal Occupational Safety & Health Administration, and by the Safe Building Alliance.

In mid-March, Charles France and Kenneth Kucera led a regional briefing in Hialeah (FL) on the benefits of trade adjustment assistance to firms hurt by import competition.

Two top scientists from the China National Centre for Preventive Medicine visited Georgia Tech on March 13 to learn about GTRI's work in industrial hygiene and ergonomics in the workplace. Ken Johnson of EDL's Environmental Health and Safety Division was their host.

ELECTROMAGNETICS LAB

At the Spotlight on Research Conference on the Science of Materials held at Georgia Tech March 25-27, Billy Livesay made a presentation on "Hydrogen Interaction with Metals and Alloys," and Chris Summers spoke on "Optoelectronic Materials."

ELECTRONICS & COMPUTER SYSTEMS LAB

Jim Toler chaired a committee on EM Wave Interactions with Biological Systems at the 1985 Symposium and Technical Exhibition on Electromagnetic Compatibility in Zurich, Switzerland, on March 5-7.

ENERGY & MATERIALS SCIENCES LAB

Jim Hubbard lectured on air

sampling as an exposure assessment tool at the Georgia Tech Asbestos Symposium on March 27.

At the Solar Thermal Research Annual Conference in Golden (CO) March 20-22, Steve Bomar presented a paper on high-temperature materials research.

On a trip to California February 11-15, Tom Brown and Bob Cassanova gave briefings on the solar thermal research and NASA space station programs to audiences at Sandia-Livermore National Lab, Rockwell, GA Technology, and Spectron Development Lab.

EMSL has received \$895,000 from the Solar Energy Research Institute to fund the Solar Thermal Advanced Research Center for calendar year 1985. Bob

Cassanova is program manager.

AT the GIT Spotlight on Research Conference on the Science of Materials, held March 25-27, Tom Starr spoke on "Advanced Ceramics," and Tudor Thomas lectured on "Recent Advances in Molecular Sieves and Zeolites."

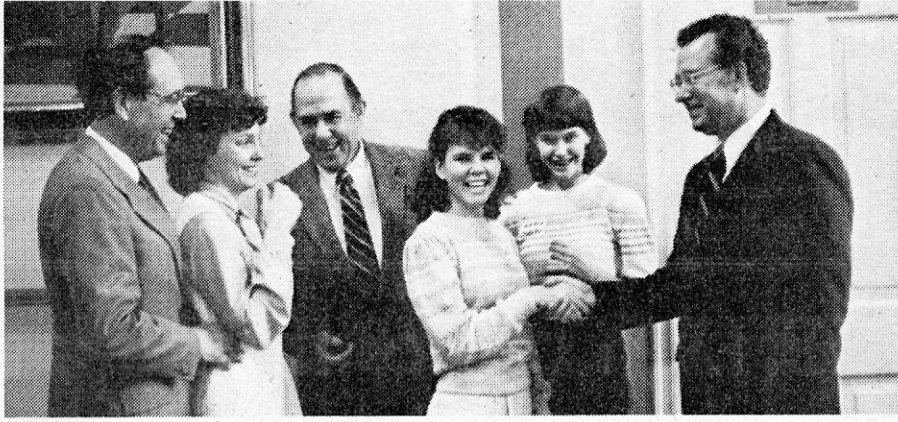
SYSTEMS & TECHNIQUES LAB

Don Rogers, John Cribbs, and James Higgins attended an intensive three-day course entitled "Radar Signal Processing and Clutter," conducted in Atlanta by Technology Service Corporation, on March 5-8. This is an intermediate-level course for engineers engaged in the design, evaluation or test of radars which must function in a clutter environment.

The Design Services Group will hold an open house prior to the April 1 GTRI senior staff meeting at the Cobb County Research Facility. They will display their computer-aided design, photographic, mechanical and electronic design, and artistic and illustration capabilities.

SYSTEMS ENGINEERING LAB

In January and February, Dr. Richard Ingle presented programs on the current state of, and future plans for, the Space Shuttle to four different civic and professional groups, including the Lions Club, the Presidential Scholars at West Georgia College, the Georgia Society of Professional Engineers, and a men's fellowship group at College Park.



Patricia Stone

New GTRI Assistant Director: Administration Patrick O'Hare (left) introduces his wife and daughters to GTRI Director Donald Grace (center) and Vice President Thomas Stelson (right) at a reception held in his honor on March 11.

O'Hare to Be Acting Personnel Head

Patrick J. O'Hare has been named acting director of Georgia Tech Personnel, effective upon the retirement of Howard Fretwell in March. President Pettit asked O'Hare to accept the interim assignment with a view toward studying and defining the future of human resources as a function at the Institute level. This study is ex-

pected to result in a new definition of, and authority level for, the director of human resources at Georgia Tech. A committee then will be formed to conduct a national search for the needed talent. O'Hare will continue to be involved at GTRI as assistant director: administration.



Charles Haynes

Mary Cribbs (left) of Supply Services and her department head, Martha Miller, reminisce at a farewell reception for Mary on February 28.

HELP YOURSELF!

Training Programs for GTRI Employees

Software Training

DOS (1:30-4:30): April 2.
 GTIMS (9-4:30): April 4-5.
 LISP (9-4:30): April 8-10.
 Wordstar (9-12): April 12.
 dBASE II (9-4:30): April 15-16.
 DOS (9-12): April 17.
 Lotus (9-4:30): April 18.
 Symphony (9-4:30): April 22-23.
 Advanced DOS (1:30-4:30): April 25.
 Advanced Lotus (9-4:30): April 29.
 Volkswriter (9-12): April 30.
 To register, call Software Training Facility, ext. 6206.

Staff Development Seminars

Introductory Project Management. April 23.
 Strategies for Winning Worthwhile Research Projects. May 14.

The above seminars, designed for research staff, are free and taught by GTRI personnel. Persons completing them earn .6 CEU. To register, contact your lab director. For more information, call Bob Collier, ext. 6238.

COMINGS AND GOINGS

engineering is from Brown Univer-

ECONOMIC DEVELOPMENT LAB

Rosemary Hall is the new administrative assistant in the Dublin Regional Office, and Debbie Reynolds has replaced Peg Zabriski as administrative aide in the Macon Regional Office. Zabriski now works for Southeastern TAAC. Mark De-myane is a new industrial hygienist in the Environmental Health & Safety Division.

ELECTROMAGNETICS LAB

Recent additions to the Electro-Optics Division:

Morris Hetzler, formerly a professor at the University of Chattanooga, is working in the Systems Analysis Branch as a research scientist II. He has a Ph.D. in physics.

Dr. Al Sheffer also is working as a research scientist II in the Systems Analysis Branch. He is on leave from Agnes Scott College, where he was a professor of mathematics.

Barney Jones is a new research engineer II in the Image Processing Branch. He has a master's degree in civil engineering and formerly worked with an architectural and engineering firm.

In the Physical Sciences Division, Abbas Torabi, formerly a GRA in the Molecular Sciences Branch, has been employed as a research scientist II with the Semiconductor Materials Branch. He received his Ph.D. in physics from Georgia Tech in January.

ELECTRONICS & COMPUTER SYSTEMS LAB

Joann Ward, formerly secretary to the Electromagnetic Compatibility Division of ECSL, has been promoted to senior administrative secretary and will be working directly with ECSL Director Fred Cain. She also will be ECSL's associate editor for the GTRI Connector.

Dr. Young S. Kwon is a new senior research engineer in the Electromagnetic Effectiveness Division. His undergraduate degree is from Inha Institute of Technology in Korea; his master's in electrical

sity, and his Ph.D. in E.E. from the University of Texas. He is married and a resident of Roswell.

Former co-op student Richard Baugh became a research engineer I with the Electromagnetic Effectiveness Division on March 25, following his graduation from Georgia Tech with a B.E.E.

ECSL said farewell to Alan Scaggs, Charles Pinson, Ed Shanahan, and Ben Atha of the Command & Control Division; Tom Taylor of the Electromagnetic Effectiveness Division; and Brad Skelton of the Computer Technology & Applications Division.

ENERGY & MATERIALS SCIENCES LAB

John Handley has been appointed chief of the Thermophysics Branch in the Thermal Sciences Division.

OFFICE OF THE DIRECTOR

Celeste Cone has been promoted to staff assistant and will be working with associate directors Bob Shackelford and Howard Dean.

RADAR & INSTRUMENTATION LAB

Barbara Schroeder is a senior secretary who has started work in the New Jersey office.

SERVICE GROUPS

Mary Cribbs, Supply Services, has resigned.

SYSTEMS & TECHNIQUES LAB

Charles Wilson has been transferred from the Defense Electronics Division to the "A" Program Office, where he will serve as associate manager. His background is expected to greatly strengthen the analytical capabilities of the office.

SYSTEMS ENGINEERING LAB

Peter DeNatale joined the Human Performance Branch as a GRA in February. He is studying for his M.S. in industrial psychology at Georgia Tech.

Resignations include Clinton Earnest (Countermeasures Development Division), Jon Wyatt (Defense Systems Division), and Myra Thompson (Concepts Analysis Division).

WHAT'S AHEAD

Events of Interest to GTRI Employees

MARCH

25-27 Spotlight on Research at Georgia Tech: The Science of Materials. A briefing for top-level R&D leaders from industry. Coordinator: Dr. Jason N. Salsbury (VP-Research).

APRIL

7-12 18th Annual Basic Economic Development Short Course. Course Director: Robert B. Cassell. Associate Director: David S. Clifton (EDL).

8-11 2nd Annual Southeastern Safety and Health Conference. Will feature 13 major program topics. Course Director: Marty Melton (EDL). Location: Sheraton Century Center Hotel, Atlanta.

17 Industrial Energy Extension Service (IEES) Workshop, "Improving Boiler Operating Efficiency." Location: Augusta Area Technical School.

MAY

8-10 Continuing Education Course, "Artificial Intelligence and Expert Systems." Academic Instructor and Administrator: John Gilmore (EML).

15 IEES Workshop, "Energy Measurement Instrumentation and Techniques." Location: Harvest House Hotel, Atlanta.

26-31 American Association for the Advancement of Science Annual Meeting, "Science and Engineering: Diversity and Convergence." Location: Los Angeles. To feature 160+ symposia, 9 public lectures, science film festival, exhibit.

Note: This column will list seminars, short courses, meetings, conferences, and other events to which GTRI staff are invited or which are of general interest. To have your special event included, send details to Connector Calendar, RCO-GTRI, Campus. Requests should be sent at least one month in advance, since *The Connector* is a monthly publication.

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