

the GTRI connector

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EPA Gives Electron Microscope for Asbestos Research

by Lincoln Bates, EDL

The Environmental Protection Agency (EPA) has transferred a scanning transmission electron microscope to EDL's Environmental, Health, and Safety Division (EHSD) for use in its asbestos pollution control program.

The microscope, valued at \$250,000, would cost \$1.2 million to replace. It originally aided EPA research personnel in evaluating water quality standards for asbestos.

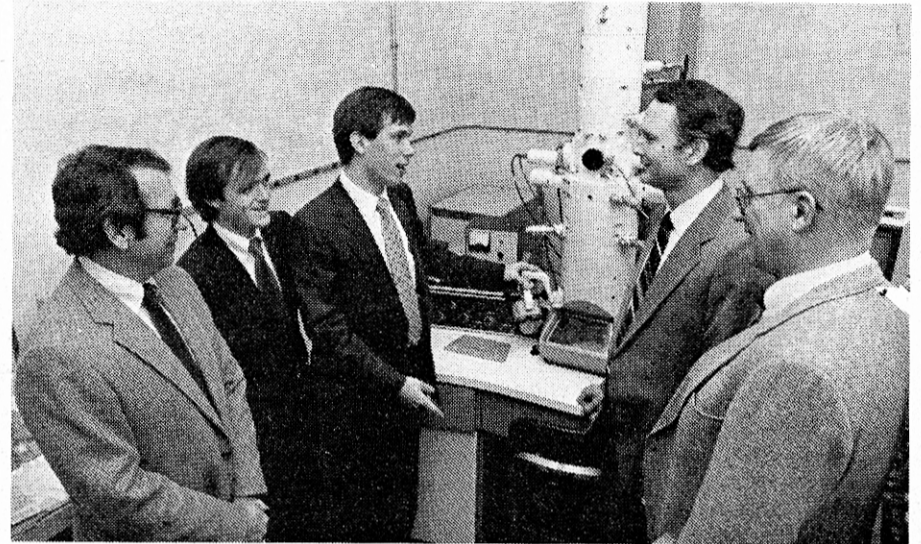
"This is the leading asbestos control program in the United States," noted EPA Regional Asbestos Coordinator Jim Littell at the presentation ceremony in late January. He said he knows of no other case where the federal agency has given such an expensive piece of instrumentation to another organization.

"We wouldn't do this for just anyone," added Winston Smith, director of EPA Region IV's Air, Pesticides, and Toxics Management Division. "To say that Georgia Tech's asbestos program is the best in the world is no exaggeration. We're proud of

our relationship with Tech."

According to Bill Ewing, leader of EHSD's asbestos programs group, EHSD can now take on more projects requiring the electron microscope capability. And he foresees plenty of work available, due to recently enacted federal regulations. The 1986 Asbestos Hazard Emergency Response Act, he points out, requires EPA to develop laboratory accreditation procedures for asbestos sampling. "There currently are no good quality assurance procedures for electron microscopy, and we can help develop them," Ewing says.

It takes weeks to learn to analyze asbestos, and Ewing predicts EHSD will conduct considerable hands-on training as use of electron microscopes in asbestos work increases. In March, EHSD will hold its Sixth Annual Asbestos Symposium at Tech, a major feature of which will be the presence of Gary Burdette, a leading electron microscopy expert with Great Britain's Department of Environment. He will assist in training during the week-long symposium.



The Environmental Protection Agency has given this scanning transmission electron microscope to EDL's Environmental, Health, and Safety Division for asbestos research and training. David Hogue of EDL (center) is explaining how the microscope works to (left to right) Kirk Lucius, chief, Pesticides and Toxic Substances Branch, EPA Region IV; Bill Ewing, leader of EDL's Asbestos Programs Group; Winston Smith, director, Air, Pesticides and Toxics Management Division, EPA Region IV; and Jim Littell, EPA Regional Asbestos Coordinator. (Photo by Charles Haynes)

According to Ewing, other potential uses for the microscope include working with EPA:

- on analysis of asbestos in water;
- in analyzing lung tissue of research rodents exposed to asbestos; and

• in exploring a probable ban on asbestos in brake shoes.

He adds that the microscope might prove useful in research related to indoor air quality, toxicological screening, materials characterization, and man-made fibers such as mineral wool.

Cobb County Suffers Major Power Outage

On Saturday, February 7, the Cobb County Research Facility was plunged into darkness, due to a major failure of power cables and switchgear. But by the following Tuesday, most of the power had been restored, thanks to the resourceful response of Georgia Tech's Physical Plant Division.

"Three sets of cables failed,"

said Doug Horner, Physical Plant's head electrical engineer. "But they were about 25 years old, which is just about the useful life of electrical cable."

By Tuesday, Physical Plant was able to restore permanent service to Buildings 2, 3 and 4 by reconnecting undamaged cables. Buildings 1 and 5 were hooked up to a rented generator until

replacements for bad cables could arrive from Chicago. The new equipment was installed the weekend of February 14, and all five buildings were back on substation power by February 17.

"Our consultant test engineer hasn't yet been able to determine why this outage happened," Horner said. "Later, when things settle down, we hope to make an

infrared scan to locate possible hot spots in the switchgear."

Thanks to the dedication and resourcefulness of all concerned — Doug Horner, Carl Baxter, Tom Jones, and RAIL and STL personnel who were determined to get their jobs done despite the obstacles—only about a half-day of work was lost.

Southcon Coming in March

Southcon, the oldest and largest industrial high-technology electronics conference and exhibition in the Southeast, is returning to Atlanta March 24-26. As usual, dozens of GTRI and Georgia Tech people are actively involved in putting the conference together. Committee chairmen from GTRI include Don Grace, Professional Program; Jim Wiltse, Seminars/Tutorials; Herschel Brown, Public Relations; and Don Clark, Host Committee.

Southcon/87 again will be held in the World Congress Center.

Some 15,000 electronics professionals are expected to attend the three-day event to see products in over 250 exhibits and to attend the 17 technical sessions.

On view will be active and passive components, microelectronics, instrumentation, test equipment, control systems, production equipment, mechanical and electronic packaging and power sources. More than 250 new products will be introduced at the show.

Richard Iverson, president of the American Electronics

Association, will deliver the keynote speech, titled "Renaissance of American Electronics." Special sessions will focus on telecommunications and surface mount technology.

Among the tutorials offered will be "An Introduction to Artificial Intelligence," taught by Ed Anderson (OIP) and Mike O'Bannon (GTRI/OOD); "Expert System Design," by John Gilmore (EML); and "A Systems View of Software Engineering," by Gary Lunsford, Ray Efurud, Beverly Hutchinson, and John Scoville.

GTRI personnel also have organized three of the 17 program sessions. Participants in

"Compatibility of New Technology IC's with the EM Environment" will include John Daher, Hugh Denny, and John Rohrbaugh of ECSL. Presenters of "Advances in Biomedical Engineering" will include Jim Toler, Norberto Ezquerra, Bernard Jenkins, Philip Kennedy, Stephen Bonasera, and Joe Seals of ECSL. Leading "Research in Design Automation for Electronic Systems" will be Gary Lunsford, Ray Efurud, and Bill Youngblood of RAIL.

Preview programs and complimentary pre-registration forms are available from your lab director's office or from OOD.

Need Some Flight Testing?

Airborne Electronics Labs at Your Service!

The Systems Engineering Lab's two airplanes, combined with the expertise of some exceptionally capable flight personnel, provide a unique in-house capability for cost-effective real-time flight testing of electronic components and systems under actual flight conditions. And that is what SEL has been doing since the first plane was acquired in 1977.

Right now, the Flight Operations Group has a long-term contract with Bendix Corporation for flight testing several different kinds of radars that the company is developing for both military and civilian applications. "One of Bendix's projects is further development of its APS-133 weather and ground mapping radar," says group leader Harland Armitage. "Since it's a tactical radar, we have to fly very low when we're testing it. Our test range is a narrow valley between two mountain ridges northwest of Chattanooga. It's kind

of exciting to fly at 300 feet above a valley floor only a mile wide with mountains above you on both sides!" he adds with obvious relish.

But they do other kinds of work, too. In April, they will begin a contract with Computer Sciences Corporation of Huntsville. A 35mm camera and a 70mm camera will be mounted on Tech's C-131, and the aircraft will fly selected ground paths collecting a large amount of film. The company will use the film in building a simulator to train controllers of fiber-optic-guided anti-tank missiles in the U.S. Army.

"Everybody thinks of us as dedicated solely to the testing of electronic warfare equipment, since we're part of SEL," Armitage says. "But our planes are suitable for many other kinds of uses as well. For example, Doug Davis of Tech's School of Geophysical Sciences used us last year for air sampling."

Armitage suggests another novel use: "In the aftermath of the Delta crash at Dallas due to sudden wind shear effects, several companies are developing wind shear devices. Since our airplanes have propellers and are less affected by wind shear than jets, they would be ideal for developing this equipment."

Other applications might be testing collision-avoidance equipment, flight director and autopilot systems, and optic/infrared systems.

SEL acquired the planes as military surplus — the T-29 in 1977 and the slightly larger C-131 in 1980. They are kept at Fulton County Airport, Brown Field. Called the Airborne Electronics Laboratories, they operate as public aircraft from both civil and military airports in accordance with FAA general operating rules. Although both planes have reached their mid-30's in age, they have a low



Harland Armitage, leader of SEL's Flight Operations Group.

number of flight hours (less than 10,000 flight hours) and are well maintained, according to Armitage.

Armitage came to Tech in March 1982 after serving nearly 30 years as an engineering test pilot for Lockheed. Chief Pilot Hasson Calloway has been at Tech since 1978; he is a retired Eastern Airlines pilot with 38 years experience. Jim Moore also began his career with SEL in 1978 as a pilot/mechanic, and Kim Williams assists him part time.



Chief pilot Hasson Calloway in the cockpit of one of Georgia Tech's Airborne Electronics Laboratories.



This is the T-29B (Convair 240), one of GTRI's two twin-engine, cargo type, pressurized aircraft which are used for flight testing of electronic equipment.

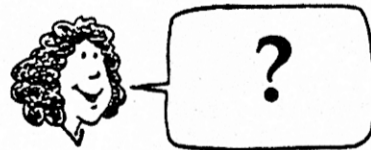
QUESTIONS, ANYONE?

by Charles McCullough, HRD

Since co-op students employed by GTRI work full time during a work quarter, why do they get no benefits, such as paid holidays, sick leave, etc.?

Let's expand the question a little to include all categories of our student employees: student assistants, graduate assistants, GRAs, and graduate co-ops. And instead of talking about why student employees don't get benefits, let's define who is benefits eligible.

THE POLICY MANUAL of the Board of Regents of the University System of Georgia, the governing body for Georgia Tech, including GTRI, states, "For all regular full-time employees of the University System . . . , sick leave shall be ac-



cumulated at the rate of one working day per calendar month . . ." (Section 802.0801). Similarly, insurance eligibility makes reference to "regular employees of the University System."

Obviously, the key in determining benefits eligibility is the term "regular employee," which, in GTRI terminology, translates into "budgeted employee." And just what does that mean? you ask. A budgeted employee is one who is treated as an individual line item in The Budget as opposed to a non-budgeted employee, such as student employees and the so-called "hourly as needed" employees, who are paid from a group fund.

Assume for a minute, though, that we are transported into another dimension where student employees are treated as benefits-eligible

employees. First, you are now required to participate in the Teachers Retirement System of Georgia. Deduct 6% from the gross amount of each paycheck. You'll also begin paying into Social Security. Deduct another chunk from your paycheck.

As a budgeted, benefits-eligible employee, another issue that would rear its ugly head would be your status as a dependent of your parents. If you're considered by your employer, GTRI, as a full-time employee, it's unlikely that your parents' insurance carriers (groups health, dental, automobile, life) would be willing to recognize you as a full-time student, thereby excluding you from coverage on those policies. Deduct still more from each paycheck to cover those new expenses.

Do those paid absences you're lusting after still look quite so attractive?

The bottom line: participation in fringe benefits carries a very distinct price tag that, for our student employees, is not cost effective.



"ARE YOU CLEARED?"

Q & A

This is the third and final installment of answers by members of GTRI management to questions posed at the series of GTRI employee meetings held last fall. Topics covered this time are:

- Future Plans
- Personnel Matters
- Presidential Search
- Miscellaneous

The *GTRI Connector* welcomes questions from its readers. If you have a question on personnel matters, please direct it to Charles McCullough (HRD), who writes the "Questions, Anyone?" column. Send all other questions to Dr. Donald J. Grace, who will direct them to the proper person to answer each one.

We reserve the right to select the questions to be answered in print, to combine questions with related content, and to edit them for style.

Future Plans

Q: What do you foresee five years hence in terms of organizational structure and technical thrusts? (Answered by Dr. Grace)

A: This is a tough question and one which occupies a significant amount of my thinking. I believe in five years we will be in a better position to have adequate discretionary funds for doing internal research and keeping up with new capital equipment needs, thanks to the new overhead structure. That capability will, in itself, stimulate a healthy growth and diversification of our activities.

In five years, we will have increased our professional staff by 25% to 50%. These new people will have brought with them some of their own technical thrusts and ideas, but we will continue to refine our planning process in identifying priority thrusts within laboratories and for GTRI as a whole. Some of the current ones to which we are giving special attention are manufacturing engineering, artificial intelligence, communications, biosafety, electromagnetic properties, and materials technology. In five years, they either will have become established programs or will have been replaced by others.

I think we will move toward a larger average size for our contracts, with a greater emphasis on multidisciplinary activities, but I hope we will always maintain the capability for individual researchers to do specialized projects. We will need to be certain to retain the capability for

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basic research efforts along with our applied activities. The decentralized mode in which much of our contract development is done, with individuals and groups of researchers working directly with potential and current sponsors, helps to assure that we stay in tune with new problems, new technologies, and new funding sources.

With regard to organization, I think it should be viewed as a means to an end and not as an end unto itself. It's a tool for getting our jobs done in the most effective and acceptable way. We need to carefully consider alternatives to the present structure and seek new and better ways of managing our affairs. GTRI recently initiated a number of committees to study support activities and will want to do some similar thinking about technical and administrative management as well.

Q: Do you anticipate any structural changes in OOD or in the organization of labs to help adapt to a new environment in which our potential sponsors are putting more and more of their dollars in large programs instead of small? (Answered by Dr. Grace)

A: Without a doubt changes will need to be made. We have been experimenting with various approaches already. An example is the SDI Office that was established some while ago with Bob Cassanova serving as the focal point for all of our SDI-related activities. Bob operates out of the Office of the Director, but in cooperation with all of the interested laboratories. His office is intended to uncover and disseminate information about SDI: the program's opportunities, personalities and politics. He also has available funds for contract development in this arena. While it is somewhat unusual to form an office around a sponsoring agency rather than a technological base, SDI is not a conventional program. We have since added space-related activities to Bob's charter. Our success with this activity has been mixed, but I think the difficulties have been more due to the vagaries of the SDI program itself than to our management of the central office concept.

In the future, we will quite possibly establish other such offices reporting to OOD in selected technical areas, but this will not necessarily be the only way we attempt to handle major programs. The Sierra program, the T-2 project, and the E-W Techniques activity are examples of contracts in which several laboratories participate, while the program leadership resides in a single laboratory. Individual laboratories also have tried other techniques for handling multidisciplinary projects.

In essence, we are in a world of change regarding government and industrial contracting procedures. Large and multidisciplinary programs are becoming more popular with our sponsors, in part because the effort and time required to get contracts through the system have become so great. We will have to be ingenious and open-minded in responding to that changing marketplace with our own organizational structures and alternatives. As I indicated in the answer to the previous question, we will still zealously guard the option of conducting relatively small projects through individual researchers as well.

Q: If there are to be additional discretionary funds, is it expected that there will be proportional increases in the availability of internal R&D funds?

A: Yes. The change in the overhead system to give GTRI a separate rate should permit us to recover our research expenses more fully. In the last several years, we have had to use funds that should have been discretionary to pay our bills. With better overhead recovery, we again should be able to invest more reasonable amounts in both equipment and internal research projects. We don't expect a dramatic increase in discretionary funds in this transitional current year (FY 87) because the overhead changes were not built into our contract backlog when we started the year. Next year, however, should be much improved financially if no major misfortune hits us.

Q: GTRI works for numerous "users." What inputs to our Long Range Plan have been supplied by these users?

A: GTRI indeed has a number of important constituencies: our "customer" group of project sponsors, the state with its political and economic elements, and Georgia Tech itself. Our assessments of the needs, requirements and expectations of all these constituencies should, and do, shape our planning.

Through our decentralized marketing approach to our broad customer base, we continually acquire feedback from the sponsor communities. Our managers at the various levels are able to evaluate and interpret these inputs into programmatic perceptions. These planning contributions are supplemented with information we obtain by various means from policy-makers in government and industry. Our planning for research directions (and their operational impacts on GTRI) is then appropriately aligned to match these marketplace considerations. An example is

our planning some years in the past to perform research and development in the energy areas to be responsive to critical state and national problems.

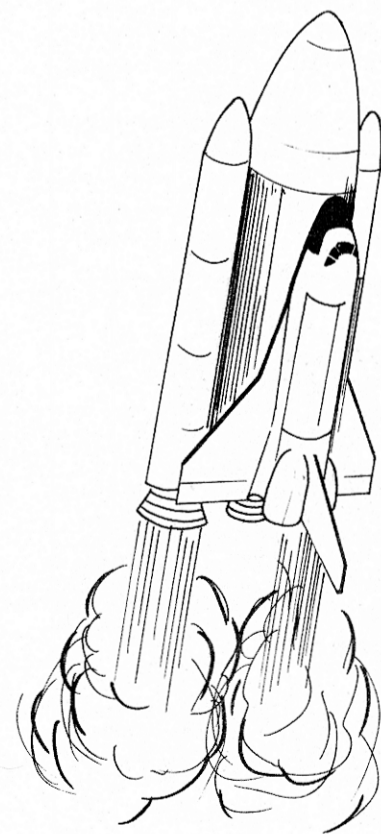
Through the years we have developed good communications and rapport with numerous state legislative and governmental officials. Our field offices have been particularly helpful in this regard. Through these interfaces, officially and unofficially we maintain a strong sense of direction that is responsive to the various needs of the state sector. This constituency is intertwined with the state's industrial complex and economic base, with which we also continually interact. The needs of these sectors are interjected into our planning process.

We are an important asset to Georgia Tech and, being part of it, want to assist in achieving university goals. We participate in the university planning process at the policy levels and adjust GTRI plans to be appropriately contributory to the overall goals of Georgia Tech.

Another part of the planning process is the solicitation of reviews from time to time by our External Advisory Board and by the Georgia Tech president. On occasion, we have had specific programmatic elements of our plan reviewed by legislative committees, industry associations, industry advisory groups, and similar groups.

Q: Why was the decision made for dramatic growth? Does the (long-range) plan show how GTRI will attain the growth? Professional staff should be made aware of strategic direction.

A: In the past ten years, we had periods of exciting growth that resulted partially from creating a favorable environment



Art by Jerry Webb

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for growth to occur and partially from being able to apply resources to encourage growth. Growth was sought then because it was beneficial to accomplishment of our State-chartered mission and the goals of Georgia Tech. It also was perceived as giving more opportunity for individual research interests and careers, greater overall stability and vitality for GTRI and, from all those considerations, stronger research programs with greater impact. These same motivations continue with us for the future.

Looking forward, the goals that have been set to approximately double the number of researchers by the year 2000 become rather modest goals on an annual basis—less than 6% increase per year. This growth rate is considerably less than some of the rates we have experienced in the past.

Our plan, which undergoes annual review and update, will indeed address the fundamental elements required for success in meeting planning goals. The basic changes we are now going through relative to more complete recovery of our research expenses were perceived as necessary several years back in our planning process—necessary as an important step to provide the financial resources to maintain GTRI vitality and modest growth. The plan will address all the important aspects of GTRI growth, such as staff size and quality, research space and equipment, and technological programmatic aspects. Each year the portion of the plan dealing with the long range is interpreted into a current year action plan that we set into motion.

We agree that the professional staff should be made aware of the strategic directions. We also intend that the perceptions of our technical staff be appropriately injected into the planning process. OOD's most direct line of contact is through the laboratory directors. They, in turn, are charged with providing bidirectional contact with the professional and technical staff. There are other opportunities through such means as ad hoc committees, joint briefings, and project director luncheons. We in the Director's Office welcome your suggestions for additional mechanisms for interaction.

A vital part of any discussion regarding growth is that we should make **quality** our first priority. We cannot overemphasize the need to be greatly concerned with what we do, how well we do it, and the value it imparts to GTRI as well as our sponsors.

Q: What plans are being considered for establishment of a central research park (facility) at Georgia Tech? What

impact will this have on the Cobb County Research Facility?

A: This question probably is stimulated by the Georgia Tech Foundation's ownership of approximately 33 acres of property acquired from the Atlantic Steel Corporation, located north of 14th Street. The potential availability of that property for Georgia Tech-related purposes opens the door to a number of exciting possibilities which could include a research park concept. Access to such a large block of property obviously is a potential asset in taking advantage of new opportunities and planning new initiatives in Georgia Tech's ever-broadening role. Dr. Pettit made a conscious and consistent effort to position Georgia Tech for an expanded role, as evidenced, for example, by the ATDC initiative. A task group representing the campus, the alumni, and the business community is working to develop plans and scenarios involving the Atlantic Steel property for Georgia Tech's consideration.

The possibility exists for some of the property to be used for research purposes by GTRI and academic units. The potential impact of this occurrence on the Cobb County Facility has to be viewed in the perspective of the overall planned growth of Georgia Tech research programs over the next five to ten years. This growth will require research space and facilities that do not now exist. Our expectation is that new facilities would be planned to accommodate research growth as a first priority rather than to replace existing facilities, such as those that exist in Cobb County. If a scenario develops which makes it attractive to relocate the Cobb County activities, the time frame to accomplish such a move would likely require a three- to five-year planning, design, construction and moving period. And our Cobb County staff would be involved in the planning.

Q: What is going to be the emphasis of the increased academic research?

A: One very general answer is that the increased academic research will be a vital part of the expansion of Georgia Tech's doctoral programs. Over a year ago, a vigorous recruiting program was initiated for top-quality research-oriented faculty and for top-quality graduate students for the doctoral programs. The academic long-range plan for the period starting in FY 85 called for the addition of 50 net new academic faculty per year for seven years, for a total growth of 350 professors. The first year they achieved 35 additions; last year it was 19, and the current year's goal is 25 more.



Art by Jerry Webb

These new faculty members are research-oriented and, in most cases, bring their own programs and ideas for projects. We in GTRI have been quite impressed with those new faculty with whom we've had an opportunity to work. Our staff are all strongly encouraged to get to know some of these excellent newcomers and find ways to interact.

Personnel Matters

Q: Our co-ops often ask why they don't have any benefits (one or two sick-leave days, paid national holidays). Any thought given to this?

A: Benefits can be offered only to "regular" or "budgeted" employees. Because of the temporary nature of co-op employment, they do not qualify for the benefits package. For a fuller discussion of this subject, see Charles McCullough's "Questions, Anyone?" column on page 2.

Q: Why don't you (GTRI) implement a before-taxes use of the 6% Teachers Retirement deduction so we don't have to pay taxes on money we don't get to use for 20-30 years?

A: As recently as Monday, January 26, 1987, Dr. Richard Fuller announced at the Business Office Coordinators meeting that there is a "very good possibility that as of July 1, 1987, legislation will have passed allowing the 6% contribution to be with pre-tax dollars." He further stated that "this program is fully endorsed and supported by TRS itself and is expected to meet no opposition."

Q: Why not allow the employees to invest their TDA's (Tax Deferred Annuities) in whichever qualified programs/funds they want?

A: There are numerous choices available for TDA investments through Georgia Tech. The number is limited for administrative reasons to programs that have an initial number of individuals who wish to par-

ticipate. The choices currently available significantly outnumber those at most universities (e.g., MIT literature on their benefits allows employees to select from two). Of course the TDA's themselves are very competitive and thus have created a substantial number of management alternatives within their own situation that allow the individual to be heavily involved in selecting the vehicle and risk associated with that vehicle in the financial management of their own resources.

Q: What are the specific coverages for individual researchers for professional liability, i.e., those of us who render evaluations, recommendations, and judgments of a technical nature daily?

Q: How are projects/proposals judged to be a risk requiring professional liability coverage?

Q: Does OOD know that professional liability insurance is unavailable in all but the most special cases?

Q: Please explain the "outside compensated consulting" disclaimer statement recently distributed.

A: Liability insurance for individuals is a subject that has received significant attention at many levels of state government and institutional management in the past few months, and it remains an area that deserves individual answers. A memorandum on this subject was issued by Dr. Richard Fuller, Vice President for Business and Finance, on January 27, 1987. Titled "Professional Liability Insurance (Amendment)," it is available to all researchers through OOD. Beyond this treatment of the subject, individual circumstances that require attention should be brought to OCA and/or GTRC. They are actively involved in seeking individual and collective resolutions to this question through both State of Georgia channels and risk coverage sources on a private level. The experts are: OCA—Richard Dobb and Michael Drew; GTRC—Bill Borchert.

You Asked About It . . .

Presidential Search

(Note: The following questions are answered by Dr. Donald J. Grace, who is the administrative member of the Presidential Search Committee.)

Q: GTRI has only one member on the Presidential Search Committee, whereas Georgia Tech has six. Why doesn't GTRI have the same percentage as reflected in the division of representatives in faculty government?

A: I cannot give a detailed answer to this question because the process was handled by the Chancellor's Office. I have been told, however, that the selection of the administrative member of the Search Committee was viewed as a key appointment by the Chancellor and that my selection reflected an appreciation on his part of the significance of GTRI. The six faculty positions were distributed so that there would be one each from Management and Architecture, with two from Engineering and two from COSALS. It's worth noting that all of the Georgia Tech committee are from academic or research units. One student member was chosen, and the Chancellor serves on the committee ex officio. I do not believe there was any intent to slight GTRI, although I do recognize that we are a unique unit within the entire University System and it is easy for people

to forget that we have such a large faculty constituency. The Georgia Tech group has been meeting regularly, and we are interacting quite well. I can assure our readers that GTRI will remain a central campus element in the deliberations for selecting a new president.

Q: Who at Georgia Tech is likely to apply for Dr. Pettit's job?

A: First of all, I have to say that the committee's information about the candidates is to be kept strictly "in confidence." For me, that will remain the case until the Chancellor decides to release the names of the five or so finalists. I can say, however, that several Georgia Tech faculty and senior administrators have been nominated, some of them by more than one person. When a nomination is given to our campus committee, the name is sent to the Chancellor, who then communicates directly with the nominee, asking whether or not he or she chooses to become an active candidate by submitting an application. All submitted applications will be carefully reviewed by the committee and screened down to a final group. The deadline for nominations and applications is March 1, 1987. Any of you may make a nomination either through the Georgia Tech committee or directly with the Chancellor. I do request that

those nominations which are submitted through me be in written form.

Miscellaneous

Q: Why is the director's column no longer a regular feature in the *Connector*? (Answered by Dr. Grace)

A: I will essentially repeat the response I gave at the meeting when the question was raised. For some time I did write a column called "Station to Station" in the *Station News* when we were called the Engineering Experiment Station. During all of the time I wrote that column, not once did anyone ever mention having read it at all, let alone give me feedback on what they thought about it. I am prepared to reinstate the column (with a new name), but would very much appreciate communications from you readers regarding what topics you would like to see covered. Later, I would like to hear your reactions to the content and presentation of the subject matter.

Q: Is GTRI or the academic community in general doing anything to lobby against the unfairness of small business set asides?

A: GTRI by itself does not have any lobbying strength in seeking improvements in national policy on this issue. It is a particularly difficult issue because our problems are more directly a result of the mechanization of the policy and related abuses rather than the basic policy itself. Being against the basic policy may be like being against "motherhood."

GTRI has voiced its concerns over policy abuses through avenues such as the university organizations, COGR (Council on Governmental Relations) being one of the more influential "lobbying" groups. As recently as mid-November 1986, the OOD group was able to raise this and other issues, directly in a special meeting with DoD policy-level people who were here representing the various procurement agencies as members of DARE (Defense Acquisition Research Elements).

While we will continue to call attention to this issue, we are not encouraged by the responses we have received. There have been expressions of sympathy, but no indications that meaningful actions would be initiated. We will have to live with the problem and watch for opportunities to work through and with some of the small businesses where that is feasible and realistic.

Q: Why does GTRI have a management structure that does not manage the projects (i.e., the project directors

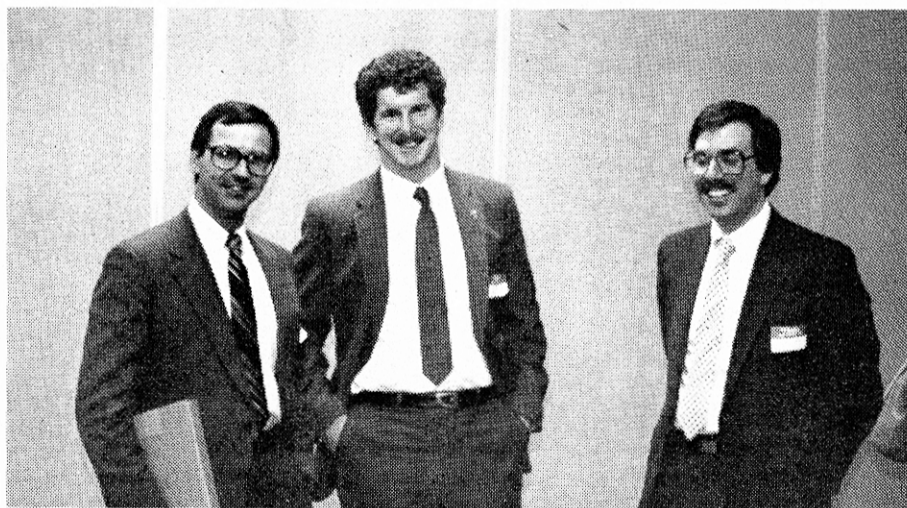
are not part of the management)?

A: Project directors are viewed as vital elements of GTRI's management structure. Projects are the building blocks of GTRI, and if each project is managed so as to achieve success technically and administratively, then GTRI is successful in that aspect of its mission. If the project fails or has poor performance elements, the reputation of GTRI suffers and the negative feedback often affects others who were in no way involved.

Organizationally, projects are aggregated and grouped in accordance with technical and mission interests to share the technical staff, equipment, facilities and support structure. These groupings become branches, divisions and laboratories as we aggregate the various interest areas on a larger scale. However, we depend upon, and need, strong channels of communication from the project director through these aggregation levels because the project director represents the research "firing line." These must be two-way communication channels that are effective in all facets of our operation from planning and program development to the everyday administrative activities involved in our work.

One of our important current goals is to greatly improve these communications to ensure that the project director's perspective and inputs are part of the total management process. In turn, we want to sharpen GTRI's ability to evaluate project managers for performance and apply appropriate rewards to those who are successful, while remedying whatever problems impact on our ability to achieve project goals.

A kernel of this question may well lie within the laboratory of the questioner and others of his colleagues. Laboratory management has been left primarily to the lab directors for many of the operational and management procedures. Here's a question for project directors in return: Have you made known your concerns through your laboratory management structure? If, and only if, you've tried that approach fully and freely—contact us in OOD.



Augusta Regional Office director Elliot Price (center) and guest speakers James Apple (left) and Scott Sopher (right) discuss issues at the recent GTRI/IIE Material Handling Seminar in Augusta. (Photo by Greg Riekhof)

GTRI Hosts Seminar in Augusta

GTRI hosted a Material Handling Seminar for Augusta-area industry January 23. The event was co-sponsored by the Institute of Industrial Engineers as part of its observance of Productivity Improvement Month. The moderator was Elliot Price, director of Tech's Augusta industrial extension office and president of the local IIE chapter.

The 37 participants heard guest speakers James M. Apple, Jr., and Scott Sopher from System, both of whom are Tech

graduates and nationally known speakers on material handling. Also featured was Mike Titzler, an industrial engineer working with Pratt and Whitney in Columbus (GA). The speakers gave an overview of material handling and discussed the decision criteria in selecting material-handling systems.

Attending the seminar from GTRI were Charles von Ohsen (Savannah), George Rivers (Brunswick), and Norris Garmon (Augusta).

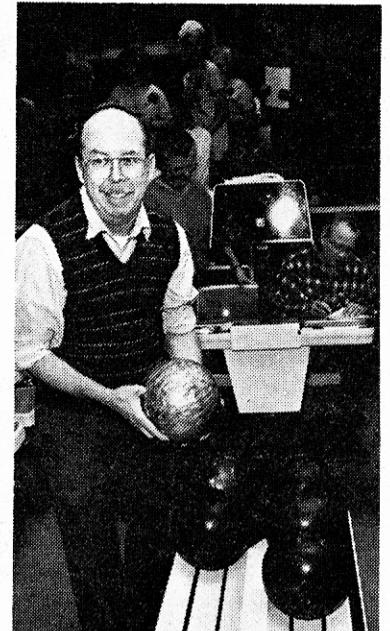




Lloyd's Lillies lead the Yellow Jacket Bowling League. L-R: Cheryl Barnett (SEL), Lloyd Lilly (SEL), Rachel Rodemoyer (PPC), Mary Wolfe (OCA).

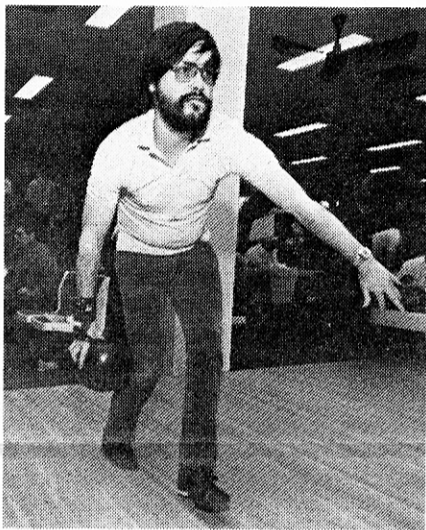


The Hooves' gather around the scoring desk. L-R: David Anderson (CRSD), D.W. Senn (CRSD), Paul Blumensaadt (retired), Clay Morgan (student).

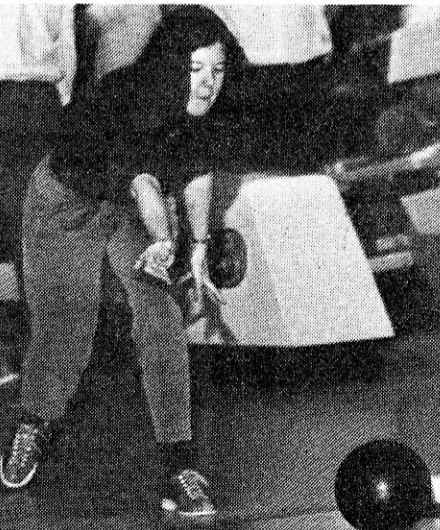


Harry Ross selects a ball.

Lloyd's Lillies Lead Yellow Jacket Bowling League Photos by Gary Meek



Ken Thompson (SEL) concentrates on his bowling technique.



Carolyn Olive (SEL) sends the ball on its way.

On Tuesday nights at 5:00, when most of us are heading home, some 40 people take over the bowling lanes at the Student Center for the weekly competition of the Yellow Jacket Bowling League. One of Georgia Tech's more venerable traditions, it was founded by GTRI's predecessor organization, the Engineering Experiment Station.

As this story went to press in mid-February, the top team in the league for the seventh straight week was Lloyd's Lillies, captained by Lloyd Lilly of SEL. On Lloyd's team are his staff assistant, Cheryl Barnett, and two of the leading women scorers in the league—Mary Wolfe (164 average) of OCA Support Services and Rachel Rodemoyer (162) of PPC.

GTRI staffers make up almost half the people in the 11-team league, and SEL and CRSD field their own teams. On the CRSD team—the Hooves'—are David Anderson, Mike Sieweke, D.W. Senn, and Paul Blumensaadt (retired). D.W. has an average score this year of 170. The SEL team—the Honey Bees—features Sharon Neu, Carolyn Olive, Robin Poole, and Ken Thompson.

Student Affairs also has its own team, Kohler's Kadets, that consistently is in the running for first or second place. Most of the teams are a mix of academic, ad-

ministrative, and GTRI people, with a few students sprinkled in. Providing continuity with the league's beginnings are the Goudlers, made up of retirees Don Dutton and Rob Tatum, Rob's wife Irene, Harry Ross (GTRI/RPMD), and Billy Atcheson (GTRI Accounting), another top bowler with an average of 171.

In fact, Rob Tatum is one of the original members of the league. "We started at least 35 years ago," Rob says, "in the days when duckpins were the only kind available, and for many years we were exclusively an EES league."

"The originator was Countryman Arthur Wong, a Chinese-American who worked for (EES director) Dr. (James) Boyd. We bowled at the Lucky Strike Lanes across from the Fox Theatre. We moved to Northeast Plaza, then to Broadview Plaza, and finally to the Student Center when it opened. At that time, we decided to expand the EES league to take in the rest of the campus."

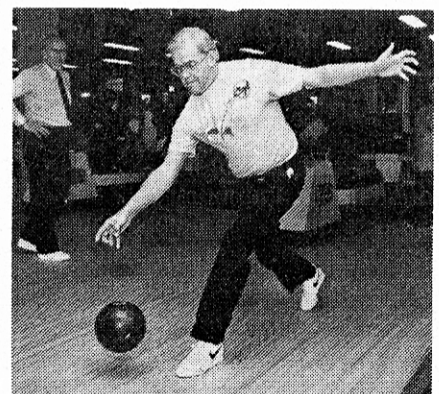
League officers this year are Sharon Neu, president; Harry Ross, vice-president; and Irene Tatum, secretary.

Other GTRI personnel who play regularly or as substitutes are Milton Bennett (OOD), Jill Brown (RPMD), Paul Cleveland (SEL), Hugh Denny (ECSL), Adrienne Harrington (SEL), Linda

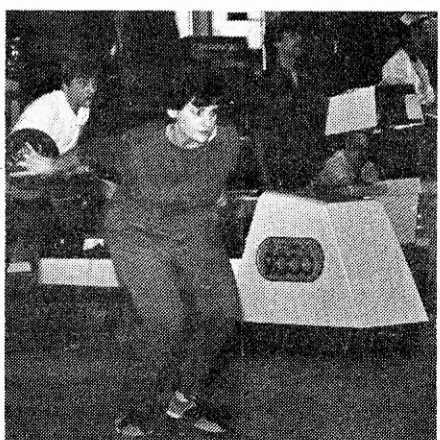
Houseworth (HRD), Robert Stroud (SEL), and Eric Wimer (ECSL). Representing OCA are Cassandra Minnifield and Ralph Grede.

The Yellow Jacket League is sanctioned by the ABC (American Bowling Congress) and WIBC (Women's International Bowling Congress) as a mixed, handicap league. It is open to faculty and staff (active or retired), students, alumni, and adult members of their families.

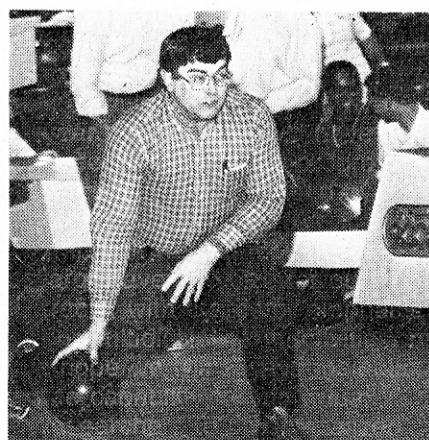
The league normally begins in early October and bowls until late April or early May, with time out when the Student Center is closed between quarters and over the Christmas holidays. Trophies are awarded in May, usually at a picnic or cookout.



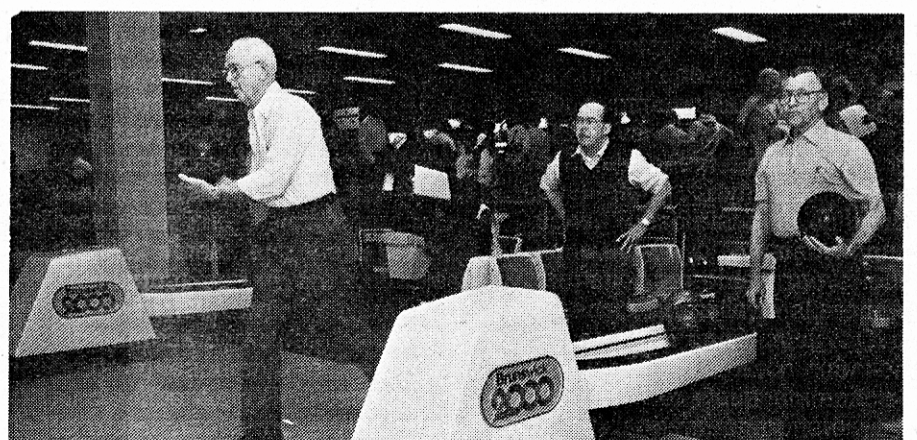
Lloyd Lilly demonstrates his prowess.



League president Sharon Neu also is captain of the SEL Honey Bees.



Robin Poole (SEL) gets ready to release the ball.



The Goudlers: Don Dutton (retired) bowls while Bob Tatum (retired) waits his turn and Harry Ross (RPMD) watches.



Scanning the Commerce Business Daily

by Lincoln Bates, EDL

The *Commerce Business Daily* (CBD), required reading at GTRI for its government procurement opportunities, is worth perusing for another reason. Those cramped, gray pages also reveal some remarkable realms of endeavor and hint at amazing stories.

True, hot items such as AIDS, hazardous materials, and advanced weaponry tend to dominate. Indeed, SDI and electronic warfare are staples, sometimes accompanied by that marvelous oxymoron, war games. True, too, many CBD entries merely encompass the mundane—renovating barracks, removing refuse, transcribing records. But the CBD makes “bazaar” reading. There’s something here for everyone.

In 1986, contractors were called to count bats in a New Mexico cave, trap wild hogs in Georgia, and scrape “avian excrement” from monuments in Washington, D.C. One could investigate catastrophe theory, build a neuron-scattering experimental hall, assess “soil-ingestion rates in children,” examine the feasibility of replacing a flagpole, measure snow in Wyoming, or analyze the market

for Virgin Islands rum.

Diverse talents also were needed for experimenting on *Microplitis croceipes* pheromone, modeling piezoresistive response, studying the numbers and types of birds ingested by Boeing 737 aircraft engines, doing R&D in the “Area of Hadron-Hadron Interactions at Very High (Multi-GeV) Energies,” and conducting an “ethnohistory/interpretive outline database study of Yugoslavs in Southeastern Louisiana.”

The federal government, understandably, requires grenades, missile parts, boots, bearings, valves and, certainly, paper shredders, thioridazine, toilet tissue, and potatoes (white, dehydrated). Last year it also demanded underwear, software, suppositories, sports officials, fresh seawater, “various resale pork items,” 58,000 frozen pizzas, and 120 hounds, among other supplies.

Started in 1951, the CBD is published by the U.S. Commerce Department. A Chicago-based staff of five compiles approximately 1,000 items per 32-page issue; some issues run to 64 pages. Space is tight and speed essential. Naturally, typos occur, some cast in irony.

The U.S. Postal Service an-

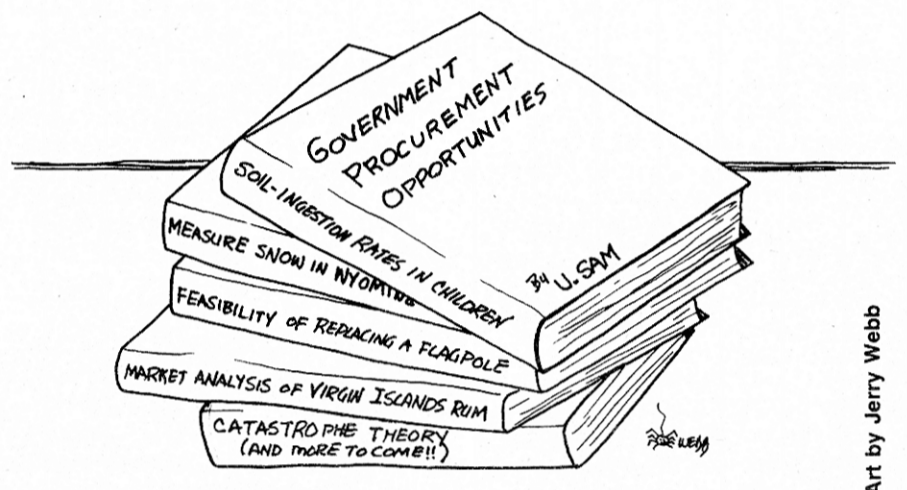
nounced annual contracts for “Miscellaneous Mechanical/Engineering Services for the Lost Angeles and Orange County Areas.” And the Office of Education Research and Improvement called for an “International Study of Written Composition in Finland.”

Some items raise eyebrows, such as “Profile Analysis of Human-Bear Relationships in Katmai National Park,” while others raise hairs on the back of your neck, for example, “Performance of Autopsies Surgical Brains

Cutting and Teeth.” And still others offer food for thought—an Army research center “kneading” to know “Fundamental Mechanisms of Cellular Deformation and Relaxation of Breads That Have Been Compacted and Stabilized.”

More attractive periodicals unquestionably abound, but if you want to track your tax dollars, gauge the government appetite, or simply get down to business, the CBD, to recruit a phrase, is a great place to start.

GTRI READING COURSE 101: (REQUIRED)



Software Review

by Pat Mathiasmeier, CRSD

One of the more popular courses at the CRSD Training Facility is WordPerfect, a word processing package for the IBM PC. Besides standard editing functions, WordPerfect offers many features not found in other word processing packages.

A line-draw function using any character or graphic design can be used for detailed drawings or simple organizational charts. Four function math allows simple math calculations within a document. The sort function numerically or alphabetically sorts up to nine keys, giving the user a small file manager. With the type-through feature, the printer can be used as a self-correcting typewriter to address

envelopes or labels. If you forget what a file is called, WordPerfect will search for a word or string and display all file names that contain that string.

For those using WordPerfect to write, a dictionary and thesaurus are available on-line. The dictionary contains over 100,000 words and can be used to check a word or an entire document. An unlimited number of words can be added to the dictionary by the user. The thesaurus can be used to look up both synonyms and antonyms and offers up to three levels of choices, divided into nouns, adjectives and verbs.

A date stamp can be entered so that the current date will always be entered from the system clock. Documents can be locked with password protection. Automatic tables of contents, lists and indexes can be generated; the index can be generated either by marking the text or by using a concordance. A conversion facility is included that will convert files from other word pro-

cessing packages to WordPerfect, retaining all formatting features such as margins, tabs, underlining and boldfacing.

WordPerfect comes defined for over 200 printers, including many laser printers. It also supports Post Script and is one of the few word processing packages for the IBM PC that can be used with the Apple LaserWriter.

For easy learning, WordPerfect commands are accessed through the function keys. In addition, a powerful macro system allows users to combine repeating functions to a single keystroke. With a few exceptions, the document is displayed on the screen just as it will be printed. The screen also can be split into two windows for the simultaneous editing of two documents.

WordPerfect has much to recommend it. It installs easily; it's easy to use, and is one of the most powerful word processing packages available. Although WordPerfect is available only for the IBM PC, Georgia Tech is

currently testing a version that runs on the DEC VAX. WordPerfect versions that run on the Macintosh and under the IBM mainframe VM/CMS operating system soon will be available for testing.

Training Schedule

- Computer Literacy (9-4:30): Mar. 12.
 - PROFS. Beginning (9-12): Mar. 19. Intermediate (9-11): Mar. 26.
 - DOS. Beginning (8:30-12): Mar. 10, 20.
 - Advanced (9-12): Mar. 31.
 - Symphony. Beginning (1:30-4:30): Mar. 2-3.
 - Spreadsheet (1:30-4:30): Mar. 6.
 - Graphics (1:30-4:30): Mar. 30.
 - WordPerfect (9-4:30): Mar. 11, 25.
 - Organizing the Hard Disk (8:30-12:30): Mar. 27.
 - 1-2-3. Intermediate (1:30-4:30): Mar. 23-24.
 - Macros (1:30-4:30): Mar. 9-10.
 - dBASE III Plus (9-12): Mar. 23-24.
 - Introduction to RBase System V (1:30-4:30): Mar. 17.
 - PC Communications (1:30-4:30): Mar. 18.
 - Freelance (1:30-4:30): Mar. 20.
- Call 6206 to sign up for classes.

Research Definitions

The following phrases frequently found in technical writings are defined below for your edification. This list was plagiarized from some unknown genius who evidently had read one too many scientific papers.

“It has long been known” — I haven’t bothered to look up the original reference.

“Of great theoretical and prac-

tical importance” — Interesting to me.

“While it has not been possible to provide definite answers to these questions” — The experiment didn’t work out, but I figured I could get publicity out of it.

“Extremely high purity, super-purity” — Composition unknown, except for the exaggerated

claims of the supplier.

“Three of the samples were chosen for detailed study” — The results of the others didn’t make sense and were ignored.

“Accidentally stained during mounting” — Accidentally dropped on the floor.

“Handled with extreme care during the experiment” — Not dropped on the floor.

“Typical results are shown” — The best results are shown.

“It is believed that” — I think.

“It is generally believed that”

— A couple of other guys think so, too.

“It might be argued that” — I have such a good answer for this objection that I shall raise it now.

“Thanks are due to Joe Glotz for assistance with the experiment and to John Doe for valuable discussions” — Glotz did the work and Doe explained what it meant to me.

(The above list of definitions was found on a bulletin board at the School of Applied Biology.)

PERSONNEL NEWS

ECONOMIC DEVELOPMENT LAB

Carol Keighron has been promoted to administrative secretary, **Queen Buford** to administrative assistant, and **Rodney Cannon** to electronics technician II.

Roche Tschirhart has joined the Hazardous Waste Group as an RS I.

Marty Melton and **Dean Lail** left EDL in late January, and **Ed Bethea** and **Jon Schmidt** departed in February.

ELECTROMAGNETICS LAB

The Physical Sciences Division welcomes secretary **Julie Payne**, who transferred from the Georgia Tech Registrar's Office. She is working part time on a BBA at Georgia Tech.

PSD also welcomes **Kelly Payne**, RS I in the Material Physics Branch. He received his BS in materials engineering in 1983 from the University of Cincinnati and his MS from Georgia Tech in 1986. While working on his master's, he examined the fatigue behavior of weldments used in the nuclear industry under the sponsorship of Oak Ridge National Laboratories. He also spent considerable effort in helping develop the Fracture and Fatigue Research Laboratory at Tech.

ELECTRONICS & COMPUTER SYSTEMS LAB

Dr. Milton Cram has been appointed chief of the Electromagnetic Effectiveness Division. He comes to ECSL from Schlumberger Well Services, where he was employed for 18 years and was manager of a research group of about 120 people. Dr. Cram brings to ECSL considerable skills in research management and the application of electromagnetics to practical problems.



Dr. Milton Cram

He received his BEE, MSEE, and PhD from Georgia Tech in 1962, 1965 and 1968, respectively.

ECSL said good-bye to **Jeffrey Aaron**, who left to go to medical school.

OFFICE OF DIRECTOR

Welcome to **Harriett Matthews**, senior secretary/receptionist, who came to GTRI from the Georgia Medical Research Foundation.

RADAR & INSTRUMENTATION LAB

RAIL/OOD has moved to new offices. They are still in Building 1, but new room numbers are: Ed Reedy, 103A; Pat Winn, 103B; Maggi Harrison, 103C. Telephone numbers remain unchanged.

Rich Ray is a new RA I (hourly) located at Eglin Air Force Base (FL), where he will be helping RAIL with various research. A graduate of Troy State University, he has been with the U.S. Air Force for a number of years. New GRAs are **Peter Barthe**, who received his master's from Stanford, and **Randy Janka**, who received his master's from the University of Central Florida.

New Jersey Office: RAIL's New

Jersey office continues to grow. Three new people joined the staff in January: **Bill Fishbein**, **Jack Harary**, and **Tony Kazules**. Bill recently retired from the U.S. Army (CECOM), where he had worked since 1952 and was one of RAIL's sponsors for several years. He has extensive experience in all areas of radar, and has 13 patents and 11 publications to his credit. He is working as a PRE on a full-time basis.

Jack, who also retired from the U.S. Army at Fort Monmouth, is working as a full-time SRE. He has worked on a variety of airborne electronics systems for air navigation in his long career. He also is an accomplished musician—he sings and is the lead trombonist in two professional dance bands.

Tony is with RAIL on an hourly basis as an SRE. He had been with Army CECOM since 1966.

SERVICE DEPARTMENTS

Computer Related Services has gained **Gina Lawrence**, systems analyst I, and **Laurence Bailey**, programmer II.

Donald Long and **Terry Long** have been promoted to instrument makers in Mechanical Services.

Research Communications regretfully said good-bye to **Jackie Erney** and **Charlie Haynes** in February.

Rodney Spencer has departed from PPC.

SYSTEMS ENGINEERING LAB

A warm welcome to the following new employees:

Concepts Analysis Division: **Marcia Wilt**, RE I, was previously employed at Rockwell. She has a BS in ISyE from the University of Southern California and is working on her MSEE at Tech. New GRAs are **David Hartup**, who has a BSEE from Purdue, an MSEE from Tech, and is working on his PhD; **Theresa**

Hill, who is pursuing an MS in psychology; and **Deirdra Ryan**, who is pursuing an MSEE at Tech.

Defense Systems Division: **Thomas K. Settle** is a new RE I who recently earned his BSEE from the University of Tennessee at Chattanooga. **Alan Harris** received his BSEE from Tech in December and has been appointed as an RE I in DSD, where he previously worked as a co-op. **GRA Tom Wells** has a BSEE from Tech and is currently working on an MSEE.

Joseph Hryczyn joined DSD in January as a principal research scientist. Previous employers included Sperry, The Institute for Defense Analysis, General Dynamics, Research Triangle Institute, and the U.S.A. Tank Automotive Command. He was graduated from Wayne State University with a BS in physics (1962), MA in mathematics (1965), and a PhD in mathematics (1970).

Marti Boyce has been hired as a financial management associate working with the Electronic Support Measures and Countermeasures Development divisions. Marti has a BA in Spanish from Agnes Scott and an MBA from Georgia State.

Vergil Coberly has joined the Advanced Programs Office as a GRA. He is pursuing his MSICS at Tech.

Ron Strickland and **Martha Fernwood** have resigned.

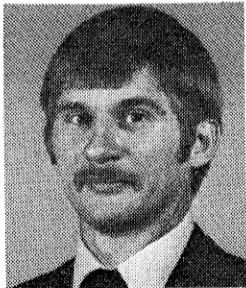
SYSTEMS & TECHNIQUES LAB

STL welcomes new employees **David D. Rodman**, systems analyst I; **Jeffrey J. Sitterle**, RE II; **Clay Donaldson**, mechanical technician II; **Steven Thompson**, RT I; **Mark Mitchell**, RE I; **Rita Fioravanti**, electronics technician II; and **Dorothy Gladney**, research technician I. **Benne S. Pritchett** transferred from SEL as an administrative secretary. **Charles Hilbers** has resigned.

PROFESSIONAL ACTIVITIES

ECONOMIC DEVELOPMENT LAB

William Spain is the new president of the National Asbestos Council.



Keith Nelms has been named an associate editor

William Spain

of the Georgia Industrial Developers Association monthly newsletter, the *GIDA Gazette*.

Kevin Downes gave a presentation January 6 on "Qualitative Detection of Lead on Surfaces" at the American Industrial Hygiene Association (Georgia Chapter) winter meeting.

On January 31, **Carol Aton** participated in Georgia Tech's "Future-scape," speaking on engineering career opportunities for women.

Constantin Soulakos and **Chris Thompson** gave a hands-on demonstration of machine vision at the January 19 SME Chapter 61 meeting.

Nancy Davis recently received a certificate of achievement from the Society of Technical Communication's Atlanta Chapter for the EHSD quarterly newsletter, *Environmental Spectrum*, of which she is editor. She also received honorable mention for the brochure she produced for

the Third Annual Conference on the Environment, Health, and Safety.

In late January, **Art Brown** conducted a seminar, "Marketing: A Practical Approach for Products and Services," for the Mississippi Valley State University EDA Center.

ENERGY & MATERIALS SCIENCES LAB

At the 11th Annual Conference on Composites and Advanced Ceramic Materials, held January 18-23 at Cocoa Beach (FL), **Tom Starr** presented a paper entitled "Reaction Sintered Silicon Nitride Composites with Short Fiber Reinforcement," coauthored by **Joe Harris** and **David Mohr**, and another paper entitled "Model for CVI of Short Fiber Preforms."

As a member of the board of directors, **Hans Spauschus** participated in the ASHRAE winter meeting in New York City January 17-21.

SYSTEMS ENGINEERING LAB

William E. (Bud) Sears gave a talk on electronic countermeasures on December 9 to the Washington (DC) Chapter of the IEEE Microwave Theory and Techniques Society.

SYSTEMS & TECHNIQUES LAB

Don Bodnar attended the administrative committee meeting of the IEEE Antennas and Propagation Society and presented a paper entitled "A Naval Electronically Steerable Antenna Concept for Hand Mobile Satellite Communications" during the January URSI Conference in Boulder (CO).

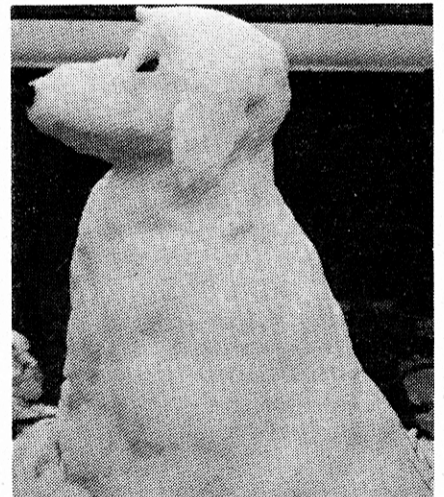
Personal Notes

EDL: **Lincoln Bates** and his wife, Susan, have a baby boy, Brendan, born January 15.

EMSL: Our sympathy to **Joe Harris**, whose father died in January.

SEL: Congratulations to **Lloyd Konneker**, who became the father of Dena Grace on December 18, and to **Fred Cox**, who became the father of Amanda Joy on January 2.

Right: "Snoopy" the Snow Dog rode back and forth to work with **Bill Dittman** (STL—Cobb County) for several days in late January. Bill's children constructed Snoopy in the back of his pickup truck. (Photo by Dave Price)



the GTRI connector

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