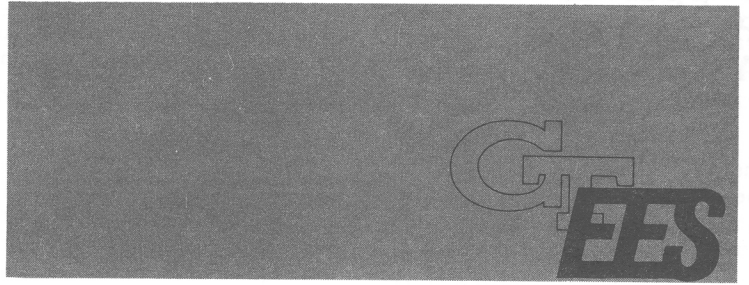


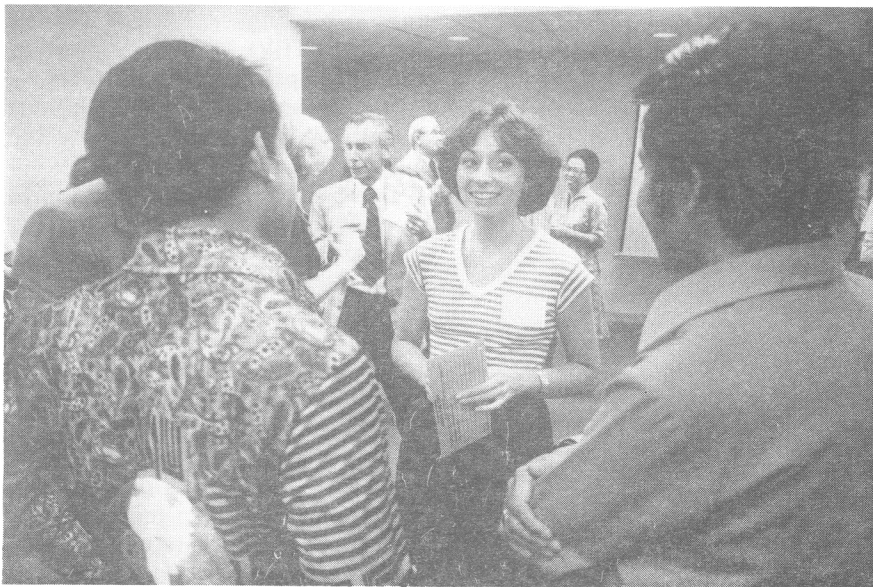
STATION NEWS

ENGINEERING EXPERIMENT STATION • GEORGIA TECH



VOLUME 6 NUMBER 7

AUGUST, 1977



Kay Auciello greets Indonesians at coffee

Hosts to Library Specialists

The Office of International Programs is conducting a training program entitled "An Associate Residency Program for Technical Information Specialists" for 18 library administrators from Indonesia from July 18 through September 30 sponsored by the Agency for International Development. Objectives of the program are: to provide an intensive professional review; to provide a preview of future trends of librarianship; to provide access to library facilities for professional research; to demonstrate the uses of audiovisual techniques; and to provide an opportunity to learn about the people and institutions of the United States. Also working on this program are staff from the Georgia Tech Library, Emory University Division of Librarianship and spe-

cial libraries in the Atlanta area.

The EES OIP hosted an informal coffee reception July 19 on the 14th floor of the C&S Building. This provided the guests an opportunity to meet their program instructors, OIP staff and other Tech personnel.

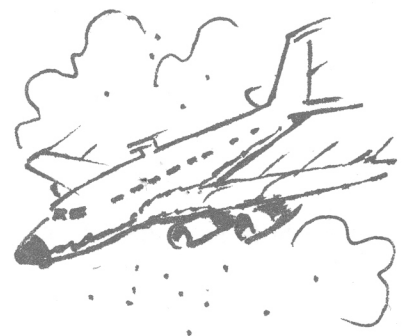
EES Scientists to Explore Man's Impact on the Atmosphere on a Global Scale

On August 5, a four-engine Lockheed Electra left for the North Pole with five tons of scientific equipment and fifteen atmospheric scientists. After approximately three days of sampling in the region of the Arctic Circle, this scientific team will return to the U.S. only to leave again one week later for two weeks of sampling

in the South Pacific, with New Zealand being the final target destination.

In this research effort, the EES scientists have several immediate concerns to investigate: the potential long range health, climate and weather problems that could be generated by the country's going to a coal energy base which generates higher levels of atmospheric sulfur; the build-up of carbon monoxide from automobiles and industrial activities; and the spray can controversy which involves the theory that fluorocarbons released from spray cans contribute to damaging the earth's protective ozone layer.

Dr. Doug Davis, project director for the million-dollar-a-year program GAMETAG (Global Atmospheric Measurements Experiment on Tropospheric Aerosols and Gases) along with Drs. **Dan Philen**, **Al Nelson**, and **Paul Wine** will be aboard the aircraft to make the first global scale measurements of the key atmospheric chemical species, the hydroxyl free radical. According to theory, this chemical species is now believed to be one of the most important chemical controlling agents of the atmosphere; however, very little direct information on its concentration in the atmosphere now exists to support the theory.



Support for Professional Activities

As part of a formal program directed to the professional development of the Georgia Tech research staff, the Professional Staff Development Committee has drafted a policy to provide support to our research staff in professional activities.

The objective is to encourage staff members to participate in the activities of professional organizations in their areas of expertise.

Two areas in which Georgia Tech provides financial support to full-time research staff are:

Position of Leadership:

Staff members who provide national or international leadership in an elected or appointed office or position within their specific professional organization are eligible to apply for reimbursement of certain related expenses. Normally, reimbursable expenses will be limited to domestic travel to attend a maximum of four formal committee meetings, planning sessions, etc., per year where attendance is required. Such expenses will be reimbursed only when not normally covered by the professional organization.

Request for support should be submitted to the Chairman of the Professional Staff Development Committee as early as possible to provide sufficient time for review by the Committee.

Conference Attendance:

In order to encourage professional growth through participation in professional organizations, funds have been made available to assist a limited number of professional staff to attend the annual or biennial conferences of these organizations. To be eligible for this assistance, the staff member must be a member in good standing of the organization holding the conference, have not previously been reimbursed through Georgia Tech for having attended a conference held by that organization, and been at Georgia Tech for at least a year prior to the conference.

Applications for financial support for attendance at a professional conference should be submitted to the Chairman of the Professional Staff Development Committee.

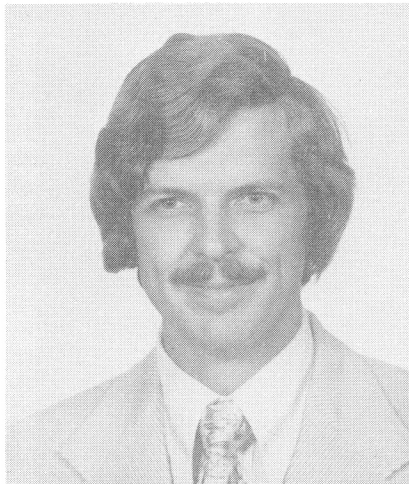
Car pools save gasoline

Because they will be judged on a competitive basis, applications will be reviewed by the Professional Staff Development Committee only once a year.

Each professional whose application is approved will be expected to write a letter to the Professional Staff Development Committee outlining the benefits resulting from conference attendance.

In addition to this letter, the individual receiving financial support must file a regular expense form with the Chairman of the Professional Staff Development Committee.

If you have suggestions or desire additional details about the policies being considered, contact **Walter Cox**, **Jim Toler** or **Bill Howard**.



Dave Clifton to head EDD

Changes in T & D Lab Organization

New energy related projects, program development and the goal of better coordination have created a need for further staff realignments in the Technology and Development Lab.

On July 21, Lab Director **Rudy Yobs** announced that the Industrial Development Division is now the *Economic Development Division* to be headed by **Dave Clifton**. It consists of: Basic Data Grp., Economic Res. Grp., Human Resources Grp., Industrial Services Grp., and Public Technology Grp. **Bill Ward**, the Assoc. Lab Director for Admin., will be acting EDD chief until Dave completes his dissertation in October.

Also, in place of the Productivity Systems Div., an *Energy and Engineering Division* has been created and will be under **Jerry Birchfield** until a new chief is designated. Jerry will then continue as Associate

Director for Program Development. The new E & E Div. will consist of two branches; the Systems Research Branch, headed by **Jim Lowry** and the Energy Conservation Branch, headed by **Bill Studstill**.

Systems Engineering News

On 19-20 July **Thomas Miller** and **Lloyd Lilly** were at WPAFB, Ohio. They presented a paper on "Aircraft Survivability" to the Tri-service Joint Technical Coordinating Group for Aircraft Survivability meeting and gave a briefing on Remote Piloted Vehicles (RPV) Mission Analysis to the RPV Special Programs Office.

Bob Zimmer and **Dave Wilkins** visited NASA Headquarters during July.

Dave Kelly and **Phil Boyd** have recently joined SED. Dave was part-time prior to July and is now a full-time SRS working in the areas of cost-benefit analysis and operations research. Phil is assisting **Neil Hilsen** in transportation planning.

Bob Zimmer is seeing better each day as he continues to recover from his recent major eye surgery.

Laurilyn Boyd, wife of Phil, is at home recovering from major surgery. She will be able to return to work after several weeks.

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International Programs

Kermit Moh has joined the IPO staff as an Assistant Research Engineer. Kermit received his Bachelor of Mechanical Engineering degree from Georgia Tech in June.

Phillip Potts and **Kermit Moh** were in Costa Rica and Nicaragua July 13-29 monitoring the field tests of the AID hand water pump.

The Agency for International Development has contracted with IPO to compile, edit and produce a publication describing the current policies and programs of its Office of Science and Technology. **Kay Au-ciello** is project director.

Jerry Lewis and **Harlan Davis** attended a conference in Asheville, N. C., on July 11-12 concerned with implementing Title XII of the Foreign Assistance Act.

Nelson Wall is in Pakistan until September 4, providing technical assistance to the International Rice Research Institute (IRRI) field office on the introduction and adaptation of IRRI agricultural machinery in that country.

David Fyffe departed August 7 for the Philippines to provide consultation and training to Institute for Small-Scale Industries counterpart personnel in Manila and field office staff in Tacloban. The three-week visit is under the auspices of the AID Small Industry Grant.

EML News

Jim Stratigos recently returned from a two-week vacation in Greece. He spent a week on the mainland visiting Athens, Delphi and Lagonisi, and then took a cruise to Turkey, Crete, Rhodes and other Aegean Islands. He visited the Acropolis at Athens, the ancient city of Ephesus and Knossos, the palace of King Minos, on Crete.

EML celebrated the "rites of summer" on July 13 with a barbecue at the home of **Glenn Riley**. The staff enjoyed pork, turkey, deer and sweet corn, washed down by a keg of beer. A good time was enjoyed by all.

Lawrie Jordan has recently joined EML in the Electro-Optics Division. Current responsibilities include being a co-project director with **Nick Faust** on the Landsat Technology

Transfer Project. He was formerly with the Georgia Department of Natural Resources as a resource planner. He has received degrees at the University of Georgia and Harvard University.

In June **Chris Bowick** received his Bachelor of Electrical Engineering from Georgia Tech. He joined the staff of the Electromagnetics Laboratory as a student assistant and worked in that capacity for over a year. Upon graduation, he decided to remain with the Lab. While a student assistant, he helped develop the digital hardware for a microprocessor based scoreboard and a microwave radiometer.

Havlicek and Team to Study Sewage Sludge Phenomenon

Wastewater treatment has become so expensive that any ideas for reducing overall costs are considered worthy of study. EES has been awarded a grant by the National Science Foundation — Research Applied to National Needs (NSF-RANN) to study a means of producing a smaller volume of waste-activated sewage sludge for ultimate disposal.

According to **Dr. Stephen Havlicek**, project director, the observation to be researched seems to be a chemical phenomenon, and, if proven, the idea may be significant in reducing the size of units for handling sewage sludge.

Sewage sludge is a perennial concern because this residue is the dregs of waste, offensive in odor and difficult for satisfactory and inexpensive disposal.

Several years ago, EES scientist, **Dr. Bob Ingols**, was involved in designing a joint wastewater treatment facility in Macon, Georgia, which treats a mixture of domestic and paper mill wastewater. It was observed that sunlight appeared to have shrunk the sludge to half its original size; in reality, the sludge does not shrink but becomes twice as dense. At the time at which the phenomenon was first observed, no way of applying it for improving the effluent to the river was conceived. It is now being considered for decreasing the volume of waste-activated sludge that must be handled at this

facility and at wastewater facilities in general.

Because a component of paper mill wastewater must be added to the activated sludge process in order to get the advantages at a lower volume of sludge, an economic study of the process will be made.

Economic Development Division

Dr. Tze Chiang presented an invited paper entitled "Economics of Thermo-Mechanical Pulping Process" on July 4 to the 31st Annual Meeting of the Forest Products Research Society in Denver.

Dr. Chiang is project director of a \$48,000 contract with the Southwest Georgia Area Planning and Development Commission for "Feasibility of Food Equipment and Machinery Study."

Mary Edna Anders is on leave of absence in order to teach summer school at the University of Alabama.

On July 21 and 22 **Bob Collier** conducted a practitioner's workshop titled "Critical Resources Planning and Management Program." The program was sponsored by Georgia Post Secondary Education Commission and the U. of G. Center for Continuing Education.

Charlie Wommack is director for the project, "Feasibility of Expanding the Facilities of RSB Figerglass, Inc." The project is funded by the company.

Under a new contract with the U.S. Dept. of Commerce, EDA, **Hardy Taylor** is project director and will establish a Control Center at Tech for a National Technology Delivery System. The University Centers participating in the project and reporting to Georgia Tech's Control Center are the Universities of Arkansas, Kentucky, Tennessee, Missouri, Memphis State University, Western Carolina University and the Mississippi R&D Center.

The Industrial Services Group of Economic Development Division was retained under contract with Cumberland Mills, Inc., of Eton, Georgia, to perform a study, "Feasibility of Expanding the Facilities of Cumberland Mills, Inc." This study was instrumental in securing a U.S. Dept. of Agriculture FHA loan guarantee.

Overhead Projector Techniques

Use the *REVELATION* technique to control what information your audience sees:

Place a sheet of opaque paper between the transparency and projector stage. Move the paper to progressively reveal — and project — more of the transparency as your discussion proceeds.

Use the *ON-OFF* technique to focus attention where you want it. With just a flick of the On-Off Bar, you can smoothly and naturally turn the audience's attention to the screen or to yourself.

Use the *POINTER* technique to draw attention to major points of your message. You simply point with a pen or pencil at the item on the projector stage, and the pointer's shadow focuses attention on the same area on the screen.

Use the *WRITE-ON* technique to promote spontaneity and interaction between you and the audience. Write directly on the transparency with marking pens or pencils. Non-permanent ink is easily removed with a damp cloth.

Use the *OVERLAY* technique to simplify complicated concepts. Use Scotch Brand tape to hinge one, two or three additional transparencies to edges of base transparency. Drop the overlays on the base transparency one at a time to progressively add information and build audience interest.

ADDING COLOR

Vary your presentation and heighten audience interest by intermixing transparencies prepared on different types and colors of film. Or highlight important areas of a transparency by using 3M Brand Type 720 Colored Adhesive Film, or pens to add color. (Call on Publ. and Info. Office for assistance.)

MAKING ORIGINALS

Make your own originals by typing, printing, writing or drawing on a sheet of plain white paper. Use Number 2 lead pencils, India ink, black felt-tip pens or carbon content typewriter ribbon. Illustrations should be large and free of intricate detail; make lettering as large as possible and keep text brief.

Antennas and Countermeasures Division of STL

Two branches have been established in the Antennas and Countermeasures Division according to recent word from Lee Edwards, division chief. They are; the Countermeasures Branch, Lee Edwards acting head, and the Systems and Antennas Branch, N. T. Alexander, head.

Continuous Operation Laser Pumped by Nuclear Reactor

Researchers from the University of Florida working at Tech Research Reactor have made a breakthrough with the continuous operation of a nuclear-pumped laser for the first time.

The importance of the achievement rests with the use of such a laser (light amplification by stimulated emission of radiation) to provide heat, power and communications capabilities to a space station in orbit. Such a laser could be located on earth or in a satellite also in orbit.

A nuclear-pumped laser converts energy from nuclear reactions directly into coherent light without the need for first generating electricity. Prior to this breakthrough, all nuclear-pumped lasers operated in short bursts.

Experiments were conducted in the research reactor at Georgia Tech. The laser operated for between ten and fifteen minutes, long enough to obtain satisfactory data. It was felt that the laser could have been operated for a much longer period of time had it been necessary.

ETL News

C. S. Wilson and B. J. Wilson, CTG, were at Cape Kennedy, Fla., during July for extended participation in the Thunderstorm Research International Project (TRIP).

R. W. Moss and H. H. Jenkins, CTG, visited IHCOR in Washington, D.C. on 1 August for technical reviews and contract discussions.

Wood-Energy Research Center Proposed for Georgia

Georgia Tech, EES and the Georgia Forestry Commission have proposed that a Wood-Energy Research Center be established in Georgia. At a recent meeting with representatives from the two organizations, Governor Busbee expressed strong interest in the concept and indicated that it would be explored with ERDA.

Georgia is presently dependent on outside sources for energy and imports \$3-billion of it annually. According to Jerry Birchfield of T&D Lab, a Wood-Energy Research Center is needed to develop wood as an energy source and as a chemical feedstock and also to help decrease industrial dependence on oil and gas. Such a center could stimulate economic activity in rural areas by creating new markets for wood and provide assistance to energy consumers in converting to wood energy.

Little attention has been focused on conversion of wood-for-energy projects at the federal level because of the regional nature of wood resources and because of a general misunderstanding in the energy community of the potential supply capability of our forests. Wood is abundant in Georgia with forest lands covering from 63-68 percent of the state.

With currently known forestry management methods, about three times the current production could be realized, according to Georgia Forestry Commission Director Ray Shirley. It is estimated that the BTU content of wood in the state would be sufficient to meet all the non-transportation energy needs of Georgia if it was converted to usable energy forms.

The Wood-Energy Research Center program would be jointly administered with Georgia Tech focusing on wood-energy applied research and the Georgia Forestry Commission concentrating on extension and education activities.

Save gas;
Drive at under 55 mph

RAIL

Bob Trebits and Tom Morton visited the Naval Surface Weapons Center and the Defense Documentation Center in Washington, DC, to obtain information on sea reflectivity. During their visit, they discovered that a single organization has originated over half of the publications on sea reflectivity on file with DDC — namely, EES!

Edith W. Martin and Doug Wrege, Software Development Branch, attended a July meeting of the Military Computer Family Advisory Committee, in Washington, DC. The MCF comprises members from the Tri-Services, industry and education. The objective of the Committee is to standardize computer architecture for the purpose of increasing the longevity of software.

Twelve out of the fourteen people in the Computer Applications Branch took part in the Tech blood drive.

Ed Reedy, Jerry Eaves, Bob Hayes, Nick Currie and Sam Piper attended the 23rd Tri-Service Radar Symposium at West Point during July. Ed and Nick presented two papers on signal processing techniques and radar reflectivity and measurements. Both these papers were very well received and created quite a bit of interest. Bob Hayes served as Chairman of the MTI sessions.

George Ewell and Brian Hudson took a summer cruise to the Bahamas as a part of a ship-board test program for the Applied Physics Laboratory in July.

Clark Butterworth is recovering nicely from surgery to remove part of an injured disc in his back. Hopefully, he will soon be back at work.

Radar Technology personnel recently got together for an indoor picnic. Everyone supplied an item of food or brown-bagged it while looking at a slide show of the cookout hosted by Jerry Eaves a few weeks ago for RT personnel.

Norm Brake's wife just had a baby boy — and Norm's doing fine! The family now has two sons, Peter and Paul.

Trying to keep pace with its increasing number of projects, RAIL has been busy hiring a large number of people the last two months, viz:

RAIL Lab Office
Melvin McGee, Research Scientist

Radar Technology Area
Otto Rausch, Research Scientist
L. Pengue, Assistant Research Scientist

Ramsay Hall, Assistant Research Engineer
Jean Stone, Student Assistant
M. Majette, Student Assistant

Technology Development Area
David Gentry, Steve Lubs, Chip Williams, June Brydges, Jeanne Hanks, Constance Ritter, Becky Adams, Kent Langseth, Ellen O'Donnell, David Stallings, Harold Estes (ARE/ARS)

John Doss, Research Scientist
Larry Gallaher, Sr. Research Scientist, transferred from ICS

Bob Newsom, Radar Technologist

Robt. Cannon, Electronics Technician

Walter Veatch, Electronics Technician

Secretaries
Alice Moore (Software Development Branch)
Susan Fuller (ESM)

Plus, five Students Assistants, four Graduate Research Assistants, and two technical assistants.

Elston Gets Stack Gas Patent

Pete Elston of Chem. and Material Sciences Div., T&D Lab., has recently been awarded a patent on his invention, "Regenerative Method Removal of Sulfur Dioxide from Stack Gases." The patent will run for a term of 17 years.

Pete's method should find early application in the control of sulfur dioxide emissions from power plants faced with the problems of high sulfur content fuels.

Congratulations, Pete.



Edith Martin chairs Computer Resources Committee

EES Computer Resources Committee

In mid-June Dr. Grace formed a committee to assist the EES Director's Office and the individual laboratories in planning and coordinating appropriate EES computer-related activities. The Computer Resources Committee is comprised of the following individuals who represent EES at large:

Edith W. Martin, Chairman
Nick L. Faust
George F. McDougal
Pat H. Ryan, Jr.
Frank H. Volger, Jr.
R. D. (Skip) Wetherington
Douglas E. Wrege

The CRC has established the following ad hoc committees and is presently inviting participation by EES professional personnel.

Management Information Systems Subcommittee
Frank H. Vogler, Chairman
Central Computing Facility Subcommittee
Skip Wetherington, Chairman
Current Lab Coordinators, Members
Software Subcommittee
Nick L. Faust, Chairman
Hardware Subcommittee
Pat H. Ryan, Chairman
Network Subcommittee
Douglas E. Wrege, Chairman

Persons having a desire to contribute to the endeavors of any of these subcommittees should convey their interest via their lab director.

T&D Lab News

TDL continues to serve the technical needs of Georgia industry through research. The Energy and Engineering Division will work in five problem areas of the poultry industry with state and federal contract funds and the support of the Georgia Poultry Federation. Beginning on August 1, the Systems Research Branch will conduct research in anaerobic digestion of poultry waste, solar/broiler house applications, mechanization of poultry processing, wastewater system design and energy conservation. The five tasks will be funded for Fiscal Year '78 for \$230,000 by the Georgia State Department of Agriculture supported by the Georgia Poultry Federation.

The Energy Research and Development Administration has also funded TDL to study energy conservation in the poultry industry. Rich Combes will direct the initial phase of the project funded at \$74,000 which will be an industry-university cooperative effort to make an exhaustive study in the Gold Kist facility at Ellijay, Georgia.

Jim Lowry, Dan O'Neil, Rich Combes, Joan Wood, and Carl Bronn made presentations to the research committee of the Georgia Poultry Federation on July 27, concerning the progress of their work in the areas mentioned above.

National Steel has funded the Energy and Engineering Division to complete a 6-month study of energy conservation in re-heat furnaces. This initial study, funded at \$35,000, will be conducted in Weirton, West Virginia. Jim Lowry is the director for the project.

Randy Mattison has joined the Systems Research Branch as an Assistant Research Engineer. Randy worked primarily in the area of water pollution while in Washington, D.C. at the National Center for Resource Recovery, Inc. At TDL Randy's expertise will be applied to the waste water problems of Georgia's poultry industry.

Deborah Hanks has recently joined TDL as secretary to the Systems Research Branch. Deborah is a native of Detroit and was previously employed by the University of Detroit.

PERSONALITY



Dolores (Dee) Ramunno, of OOD

About a year ago, Don Grace, the new EES Director, opened his door for business, changes were made, people moved, new phone numbers appeared . . . and Dee arrived.

Dee Ramunno — right-hand lady assistant and secretary to Dr. Grace, is superwoman of the OOD papers and files and is one of the live ones at Georgia Tech. In the midst of calendars, correspondence, conferences and calls, however, Dee retains her humor and her individuality. The first thing one might notice about her is that she is an attractive person who seems to know who and what she is. Exuding confidence, Dee took on a challenging position that demanded common sense, efficiency and sensitivity. One realizes she has an inner strength, born perhaps of up-and-down experiences which have tempered her character.

Dolores Ramunno was born in Chicago, matriculated at Northwestern, completed business courses at Chicago's Beverly College, lived in Tennessee and then settled in Atlanta.

Dee's father had a Chicago photo engraving business which gave her the opportunity to read her favorite Flash Gordon comic strips well ahead of printing them on giant rolls of paper. Perhaps her extra energy began there.

Her family teamwork plays an important part in her life. Husband Tony, who pops in and out of her conversations with admiration and affection, is a registered professional engineer who reinforces her appreciation of nice things and the good life. Their children have been a "His, Hers and Ours" situation. "Tony was a widower when I met him," says Dee. "It was a blind date, and we went to a masquerade ball. I often tease him, claiming I thought he was wearing a mask."

"We're crazy golfers," she adds. "Tony and I play golf every weekend and enjoy it thoroughly." When asked scores, she sparkled, "I'm not talking!"

One of Dee's interests is doing oil paintings; seascapes and landscapes being her favorite subjects. How often does she paint? "It depends," she replies. "Last time it was just long enough to decorate my home."

Believing and living a moral life, Dee says, "We cannot be a strong country unless we are morally stable and strong as individuals. I firmly believe that what you put into life, you get back. People seem to lose track of being appreciative of what they are receiving from life. Personally, I am grateful."

She likes new experiences and real people. She will stand up for what she believes is right, no matter the consequences. Dee is not a marshmallow one can push around. However, whether giving up her lunch hour to help someone find an apartment or sharing bagels and cream cheese with Ann Mintz, Dee shows a gentle nature that breeds compassion and fondness for people.

Dee Ramunno separates the wheat from the chaff, the talkers from the doers, the genuine from the pretense while keeping the OOD and EES on schedule.

Students Visit EES

A group of 70 high school seniors interested in science and engineering visited Tech, 28 July, under the auspices of the Atlanta University Center as part of the Minority Introduction to Engineering (MITE) program. They were given a slide show overview of EES organization and programs by **Jim Donovan** followed by a presentation and discussion of pyrolysis research underway by **Jim Knight** of T&D Lab. Similar groups were scheduled for 4 and 11 August.

ASL

C. T. Rucker, J. W. Amoss, G. N. Hill and N. W. Cox of the Solid State Science Division had a paper published entitled, "Series-connected GaAs and Si IMPATT-diode Chips: Some New Results," p. 331, in the May issue of *Electronics Letters*.
