

STATION NEWS

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EES Demonstrates Research for Chinese



Tom Brown talks to the delegation at the reviewing stand at the DOE/ACTF. Vice Premier Fang Yi and President Pettit are in foreground on right.



Dr. Donald Grace, EES director, welcomes the Chinese and the press.

Two of three Georgia Tech demonstrations for the Chinese visitors on Feb. 1 were of EES research: the ERDAS capabilities involving remote sensing and the DOE/ACTF. Everything seemed to run smoothly, and according to many who commented on the internationally-covered occasion, it was a fine job.

At the solar demonstration, **Tom Brown**, leader of the solar site team, addressed the visitors which included the Chinese minister for Science and Technology. "I, too, would like to welcome you to Georgia Tech ... and more specifically to the Advanced Components

Test Facility," his eight-minute speech began. The wind was cold and biting, Brown recalls, as the entourage stood on the recently completed reviewing stand outside the facility fence.

Our visitors seemed adequately pleased with the facility demonstration, according to Brown, and their questions tended to indicate a sincere interest in high-temperature solar energy. "Have you ever operated turbine machine with the facility?" Vice Premier Fang Yi asked Brown, and the answer was that we've operated two devices that could be used to drive conventional turbines.

"It speaks highly of the Institute," Brown stated, "that so many people were attracted to the facility that day. We did have, by the way, the highest solar insolation recorded at the facility: 997 Watts/meter²."

Late in the afternoon, there was a rapid clouding up, and Brown was aware of what that could mean — in addition to the mirror field's reaching its west limit if the visitation schedule was not kept closely — ten minutes could make a difference. Fortunately, the group was on schedule, and as Brown was walking by **Brett Ellington**, he heard the EES co-op whisper, "Talk slowly — it's clearing!"

RAIL News

Bob Trebits, Nick Currie, Ramsey Hall and Ben Perry — the RAIL "iron men" — returned home in December from Stage III at Panama City after enduring eight weeks of wet, cold weather; helicopter rides; swinging on ropes into bouncing boats in five-foot seas; flakey equipment; changing antenna predictions 90' in the air in 30 kt. winds; sleeping on six-foot bunk beds with eighteen-year-old mattresses; and eating Ben Perry's cooking. Unfortunately, they had to go back for three more weeks in January.

Nick Currie and John Scoville attended the Government Microcircuit Application Conference (GOM-AC) in Monterey, Cal., in November. Nick presented a paper entitled "A BISS/WIDS Sensor for Waterborne Intruder Detection" coauthored by **Frank Riherd, George Ewell and Brian Hudson**.

RAIL welcomes the following newcomers to its staff: **Perry Schwartz, Richard Schlecher, Don Irwin, Dinal Andreasen and Jeff Hopper**.



Systems & Techniques Lab

During February, Wing Commander **Joe Pfitz**, Liaison Officer for the Royal Australian Air Force, who is presently working with STL, arranged for a 4-showing film program on his native Australia. EES staff, families and friends were invited to enjoy the movies shown at both the Cobb County and campus facilities. David Powell of the Tech Media Center helped Joe with the presentations.

Deborah L. Frye, senior secretary of the XM Program Office, was married to Manfred K. Keais on Saturday, Nov. 18 in Marietta, and the couple honeymooned in Gatlinburg, Tennessee. Mr. Keais is employed by the Coca-Cola Co.

On Feb. 9, **Cliff Burdette** was interviewed on his research in cryopreservation of organs for the syndicated radio program "Man and Molecules."



Peggy Bronn (TDL) prepares display used at the 6th Energy Technology Conference and Exposition held in Washington, D.C., in late February. On exhibition were Georgia Tech energy-related research including solar, biomass and energy conservation. Also participating at the event were: **Jerry Birchfield, Bob Cassanova, Richard Combes, Jack Spurlock and David Wade**.

68° is better for you
and your country

Systems Engineering Division

Neil Hilsen and John Moskaluk of the Systems Technology Branch attended the Transportation Research Board Conference in Washington, D.C., in January.

Rhonda Foster, Systems Technology Branch, has resigned her position for employment elsewhere. SED wishes her success!

Robert McMahon

EES staff mourns the loss of **Robert E. McMahon** who died at his home on Jan. 17. McMahon, age 26, was a technician with the ESM Division of RAIL and had been with EES for about three years.

Technology and Development Lab

Joining the Industrial Extension Division professional staff is **Robert S. Hawkins**, Research Associate I, who is presently completing his M.A. in industrial engineering from N. Carolina State.

Deepest sympathy is extended to **Joyce Culpepper** (IED) on the death of her husband, Stuart, Feb. 6.

TDL's wood-fired warm air system located in a poultry growout house in Carrollton, Ga., worked well enough in Nov. and Dec. to keep poultry warm without the aid of propane gas normally used to provide heat.

Dave Wade, head of the Community Energy Systems Group, was quoted in a recent release on cogeneration in the Piqua (Ohio) *Daily Call*. Dave is working with an Ohio consulting firm on a district heating and cooling project for the city of Piqua.

Grant Curtis of the Industrial Energy Extension Service, was a feature speaker at a workshop on improving steam boiler operating efficiency. The workshop, which was held in Chattanooga, Tenn., was sponsored by the Chattanooga Engineers Club and the Chattanooga Manufacturers Association.

Rosalinda Ratajczak, senior research scientist of the Economic Development Division, was a guest on the Jane Simon Interview Show on WGST, Jan. 25. Rosalinda spoke on taxation for Part 6 of the *Economics on the Air* series. On Jan. 30, she addressed the Legislative Forum of Georgia at the State Capitol and gave an analysis of the possible uses of the state's tax surplus to an audience of legislators and lobbyists. Rosalinda also represented the economics field in a conference-workshop in Chicago at which an interdisciplinary group outlined recommendations for questions on the National Assessment of Education Progress Tests.

Energy economy is
everybody's business

Applied Sciences Lab

In January **Jack Spurlock** served as session chairman at an AAAS annual meeting in Houston and was the general chairman for a NASA Life Science Workshop at the NASA Ames Research Center in San Francisco.

John Goodrum has a new project, "Development of Cold Cathode Devices Based on In-Situ Composites," which deals with development of new radar equipment, funded by the Air Force.

Martha Clayton, ECSD, contributed five original artistic creations to an anthology entitled *The Ethnic American Woman: Problems, Protests, Lifestyle*. The anthology, edited by Edith Bricksilver (English Dept.), was published by Kendall/Hunt in December, 1978.

Electronics Technology Lab

Hank Jenkins and **Bob Rice**, (CTG), visited Eglin AFB, Fla., to conduct field tests.

Don Clark (EMC) attended an EMC/IAP User Forum in Albuquerque, N.M.

ETL is minus two engineers as of January. **Spurgeon Robinette** left to accept a position at Robins Air Force Base, and **Don Sentz** is enrolled in graduate study and has accepted a teaching assistantship in EE at Tech.

Service Groups

Martha Miller, Supply Services, recently took an enjoyable month-long trip to Egypt.

Pat Corbin has joined the Reports & Procedures staff as a technical typist in the Report Section. The Mechanical Services Department has several new employees: **Grady Fleming**, Machinist; **Allen Hayes**, Mechanical Technician II; **Clyde Osborne**, Machinist.

John Parker, former building manager for the Electronics Research Building, has transferred to the Cobb County facility and can be reached at 427-4662.



Friends at EES extended best wishes to **Jim Donovan**, former head of the Publications and Information Office, at a reception held in his honor on Jan. 31.

Office of International Programs

Ross W. Hammond, director of IPO, has been appointed to the U.S. National Advisory Committee which is helping to plan and prepare a joint Nigerian-American Workshop on "Education and Technology in the Service of Nation Building" to be held in New York City April 9-11, 1979.

The Bio-Energy Council of Washington, D.C., has contracted for the services of IPO to coordinate arrangements for BIO-ENERGY '80, the Bio-Energy World Congress and Exposition, which will be held at the Georgia World Congress Center on April 21-25, 1980. **Dick Johnston** will be in charge of providing support services in the areas of program development, physical facilities and housing arrangements, conference invitations, registration, audiovisual arrangements, media coverage, production and distribution of conference proceedings, and other on-site services as needed. Several hundred decision-makers and researchers from energy and environment-related agencies, industries, universities, and community and professional groups from around the world are expected to attend the event.

The Agency for International

Development (AID) has awarded IPO a two-year "indefinite quantity" contract to respond on a task-order basis to requests from AID Missions worldwide for technical assistance on rural water supply problems. Expenditure of up to \$350,000 a year is authorized. **Phillip Potts** is project director.

As a result of the expertise gained in the recently concluded two-year program of field testing of the AID manually-operated water pump at 30 rural sites in Costa Rica and Nicaragua, IPO has six other pump projects currently underway or committed. Water pumps are being installed in the Dominican Republic, and local manufacture of the pump is in progress in Indonesia. IPO will conduct on-site pump project feasibility studies in Bolivia, Pakistan and the Philippines during the January-March period. Installation of U.S.-manufactured Moyno pumps in Togo and Benin also is pending. Personnel working on these projects are **Phillip Potts**, **Andrew Karp**, **Kermit Moh** and **William Calvert**.

Frank Malvar has returned to the Philippines to supervise construction and testing of a small, labor-intensive pyrolysis unit over the next several months. The project, sponsored by UNIDO, is being implemented with the cooperation of the University of the Philippines.

Abou — No Fluke

Shortly after **Jim Knight** (TDL) toted off the turban-wrapped, less-than-chic Abou Award from the EES party in December, he received notification of a one-year contract with EPA for \$99,700 for a pyrolysis project. "I hope it works that way every month," laughed Knight. "I could be converted to a believer!"

Veterans of EES are aware that the Abou Award, a highlight of EES Christmas parties, is annually bestowed on chosen individuals who have suffered in the name of research, but whose suffering is not self-inflicted. Winners from the past include: **Jack Spurlock, Dwight Allen, Ben James, Dick Johnson, Steve Bomar, Billy Atcheson, Bob Ingols, Fred Dyer** (runner-up/**Betty Yarborough**) and **Gordon Harrison** (runner-up/**Jimmy Dameron**).

Liaison Council Meets

More than 20 representatives from the Georgia business and industrial community attended a luncheon meeting of the newly-formed Business and Industrial Liaison Council Jan. 17, on the Tech campus. At the luncheon, Dr. Pettit, president of Georgia Tech, outlined the ways that council members can work together and benefit from each other's expertise. The Liaison Council, established by Georgia Tech and the Georgia Business and Industry Association, is made up of business and industry representatives and Tech administrators, faculty and researchers.

Huey to Retire



Harold Huey, with over 28 years service to EES, has announced his plans to retire from Georgia Tech and from his position as manager of the Mechanical Services Dept. effective March 31, 1979. Harold is leaving with our very best wishes for his future and with our sincere thanks for his contributions to EES throughout his career.

Beginning Feb. 15, overall responsibility for management of the mechanical services operation was assigned to **Bob Plumlee**, currently with STL.



Solar Squirrel Departs

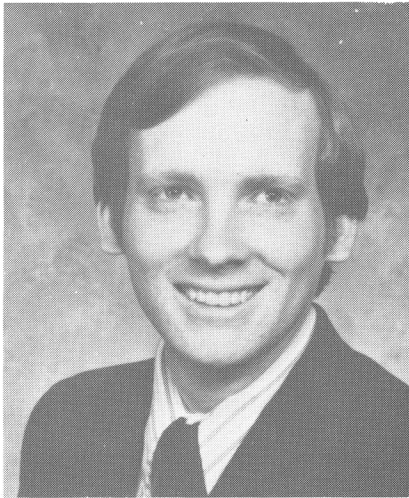
The Chinese have departed from Georgia Tech, and so has the Solar Squirrel. The day before the Chinese visit she died, and now the ultra-active and self-invited guest of many days is buried under her favorite oak . . . the only tree within the solar site fence. No more will the EES solar team see her frisking up and down the guy wires which took her frequently to the 80-foot platform above the mirror field. No more will she chew through radiation measurement wires (the number was over 20) . . . or confidently romp among instrumentation. Vanity, perhaps, seduced the busy lady into choosing a home above 550 mirrors.

"She had class," according to **Hamp Teague**. "She chose to make her computer-based nest out of sapphire insulation materials, not the cheaper fiberglass. No doubt, the squirrel didn't realize what a hot spot she had selected for her home so the solar site group tried valiantly to rescue her, planning to take her to Teague's Chastain Park home. Whether her demise was from eating insulation or drinking anti-freeze, her solar visit is over.



The Millimeter Wave Systems and Technology Course held in mid January exceeded all expectations in enrollment numbers. Shown here, **Bob McMillan** listens to a jest exchange between **Jim Wiltse** and **J. W. Dees** before McMillan's presentation to the class.

Michelson Studies Near-Extinct Manatees



The manatee, sometimes referred to as the "sea cow," is a large, totally aquatic mammal that can achieve a length of as much as 12.5 feet and weigh approximately one ton. Manatees, or their close cousins, the Dugong, inhabit most of the coastal and estuarine waters of the tropics and subtropics. The U.S. manatee population is concentrated in the coastal waters of central to southern Florida.

Why is it that so few people today have seen or even heard of the manatee? The answer lies to a large extent in the declining population of the manatee. The total number of manatees in the U.S. is established to be only about 850. This population figure is believed to be far below historical levels and is a direct result of man's encroachment in the manatee's natural habitat. This is exemplified no better than in the case of the Steller's sea cow, a cold water member of the Dugong family, that was so avidly hunted by man that it was totally eradicated only 27 years after its discovery in 1742.

As European man began to colonize the New World, the previously secure existence of the manatee in the Americas was threatened as their hide was used for leather, their oil and blubber used for fuel, while men cultivated a taste for their meat. The greatest pressure on the manatee population in the U.S., however, has come about in recent decades due to loss of grazing territory and motor boat inflicted injuries.

Currently, the Florida manatees are protected under both Federal and State laws which prohibit the taking, sale, possession, importation and transportation of manatees or products derived from manatees within the U.S. But of how much value are these laws? How can they be enforced? After all, Florida was established as a manatee sanctuary by the English as early as the 16th century and still the manatee has declined. Part of the

problem is a lack of knowledge about what is conducive to manatee survival. We know from experience that motor boat injuries are detrimental and we suspect loss of grazing territory and cold weather serve to diminish the population but questions still go unanswered. How much grazing area is actually needed per individual, what vegetation is most useful to healthy development, how cold is too cold for a manatee in the wild? Beyond declarations of jeopardy and noninterference, we need further information on the manatee to (1) ensure that the *correct* steps are taken to preserve the species, and (2) to provide an adequate data base upon which to establish and justify positive action programs to preserve the species.

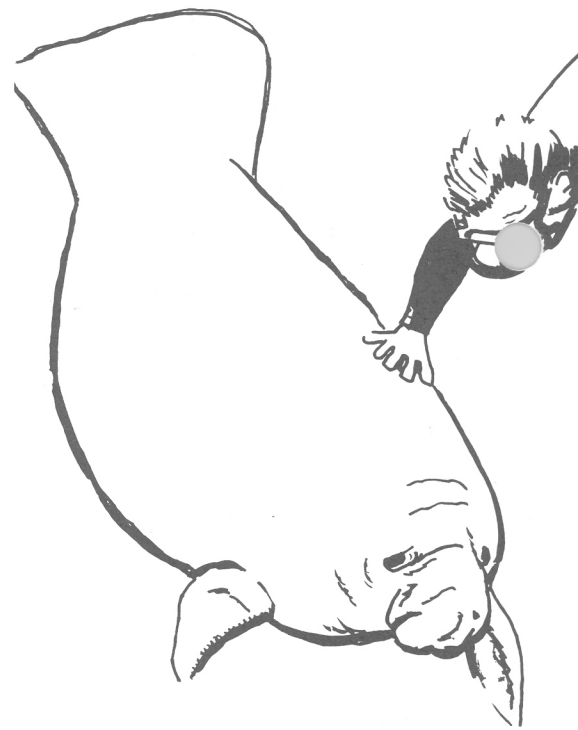
In this regard, EES at Georgia Tech has initiated a study into methods of automatic electronic position locating and tracking of manatees. It is hoped that the information about diurnal movement patterns, congregational habits, preferred feeding spots and times, as well as migratorial data which can be gained from a system such as this will provide the biologists, conservationists and legislators with invaluable information necessary to the preservation of Florida's manatees. Under the direction of Georgia Tech EES Research Engineer Robert Michelson, this program investigates and develops the techniques required for an effective automated manatee tracking system, and EES devised the concept of an electronic sensing network that can locate and track a large number of manatees continuously and completely automatically.

Michelson says the system is a number of strategically placed receiving stations which are linked to a computer. An electronic tag carried by each manatee emits signals which are picked up by each of the receiving stations. Triangulation is performed by the computer based upon these receptions, with the output being a two dimensional position fix on the mammal. The system will be able to operate without human intervention which thus allows data to be recorded continuously every hour of the day for months at a time. Such detailed and complete information is of importance if we are to help the manatee regain strength in our coastal waters.

According to Michelson, "One of the most difficult factors involved in tracking the manatee is the manatee itself. Since information concerning manatee behavior is the ultimate output of this system, it is imperative that the electronic tags placed on the manatee do not drastically modify the behavior of the tagged individual." Manatees, however, are quite sensitive on all parts of the body and quickly find harnesses and straps a nuisance. EES is therefore striving to reduce the size of the manatee-

borne electronics package as much as possible. In addition, biologists from the U.S. Department of the Interior, Fish and Wildlife Service, are working on methods to attach the electronic tag to the manatee in the least obtrusive manner.

When the tracking system is fully implemented by EES, it will be turned over to the biologists of the National Fish and Wildlife Laboratory in Gainesville, Florida, who will tag the manatees and evaluate the data received from the system's computer. Based on the research performed by engineers like Michelson as well as the biologists of the Fish and Wildlife Service, it may be possible to avert the inevitable extinction of the West Indian Manatee.



Robert Michelson first became interested in the manatee when he was reading a skindiver magazine and noticed a small article about the problem. Michelson wrote to the Fish and Wildlife Service telling how EES could electronically track these animals and get vital sign information for them. There was sufficient interest to result in a contract.