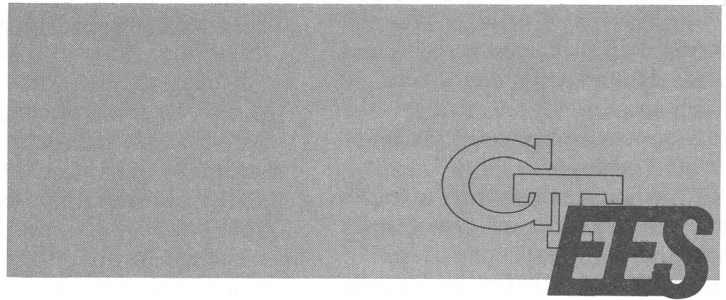


STATION NEWS

ENGINEERING EXPERIMENT STATION • GEORGIA TECH



VOLUME 5 NUMBER 10

NOVEMBER, 1976



Rob Micholson (left) and Charles Trawick (right) complete de-bugging tests of the Target Processor.

Man-Made Computer Simulates Radar Targets and Clutter

Over two years and thousands of man-hours have already been invested by the Radar Technology Division in the design and construction of EROS—an Environment and Radar Operation Simulator—used to test battlefield radars.

EROS was contracted for in June 1974 by the Combat Surveillance and Target Acquisition Laboratory of the U.S. Army Electronics Command. The project, directed by Senior Researcher **Stephen Cole**, is expected to be completed by January 1977.

The function of EROS is to synthesize, with repeatability, the radar return from battlefield targets and clutter. A prototype constructed in the Electronics Research building serves primarily as an engineering

tool to improve engineering design, and secondarily, to detect defects in operational radars.

EROS is a hardware facility consisting of a digital computer with typewriter terminal, high speed special purpose digital hardware, analog-hardware and application software.

It interacts with the radar during real simulation of a battlefield setting by sensing the radar antenna's scan angle and responding with the appropriate composite backscatter. The scene to be simulated is specified by the user, and EROS provides extensive facilities for simplifying the entry of simulation control data. The simulation information may include recordings of radar return from targets, clutter spectral statistics, radar cross section statistics and antenna patterns.

Members of the Radar Technology Division involved in completing the EROS project in addition to Cole include: **Ed Flynt, Eric Sjoberg, Anne Clayton, Rob Michelson, Beverly Rice, Peter Hedin, Charles Trawick and Ken Rasche.**

EES "Air Wing" Formed

The EES has obtained a surplus T-29B military aircraft from the Department of Health, Education and Welfare.

The airplane, similar to a civilian Convair 240, will be used exclusively as an airborne electronics laboratory for EES and Georgia Tech research. Maintenance and operation of the plane will be supervised by **Dick Hodges (X 3551)** of the Applied Engineering Laboratory.

The aircraft has been based in storage at Davis-Monthan Air Force Base in Tuscon, Arizona and is expected to arrive at the Fulton County (Charlie Brown) airport in late November.

It will not be available for passengers or recreation use.

Will it be named "Experiment #1"?

Reception for Allen Ecker

On Thursday afternoon, November 4, a large number of EES staff turned out to bid farewell to **Dr. Allen Ecker**, the departing director of AEL. His many friends and associates gathered in the Baker Building auditorium for refreshments and an opportunity to join in wishing Allen every success in his new venture with Scientific Atlanta, a local electronics firm.

Research At Georgia Tech

- Research is the fastest growing and most dynamic segment of Georgia Tech activity.
- 600 contracts bring to Tech \$18 million annually.
- Within one or two years, research contract income will be greater than the State appropriation.
- About 400 of 1000 faculty are fully financially supported by research contract funds—300 of 1000 staff are fully financially supported by research contract funds.
- About 600 of 1600 graduate students are fully financially supported by research contract funds.
- About 400 of 7400 undergraduate students receive financial support from research contract funds.
- Contract research funds provided more than \$1,400,000 for new research equipment in 1976.
- Georgia Tech's most significant and unique research contribution is applied research that supports new and existing industry. In the State of Georgia, several thousand new jobs are created and several thousand old jobs are saved each year by Tech research.
- Research greatly enriches the educational programs at both undergraduate and graduate levels. Students are in contact with more and better faculty. They use more and better equipment. They learn first-hand about new developments that increase their value as professionals.
- The \$18 million annually that Georgia Tech brings to Georgia has a great direct economic impact on the State. Georgia Tech is the largest center for technology in the Southeast.
- Some areas of recognized national leadership in Georgia Tech research are: solar energy, waste recycling, electronics, flammability and fire safety, textiles, high-temperature materials, high-energy plasmas, material properties, fertilizers, nuclear energy, and environmental conditions.
- Potential for future growth is good.

Contract Development Seminars Held

During the period of October 18-20, a series of late afternoon Contract Development Seminars were conducted by Associate Director **R.C. (Dick) Johnson** and other EES staff principals.

The purpose of the seminars was to inform and orient new project directors in the techniques and methods of contract development practiced at Georgia Tech and EES. Each laboratory was asked to fill a quota of 4 to 6 people for the seminars and some 40 staff members attended the sessions.

Held in the Baker Building auditorium, the seminar series included such subjects as: "Organization of Sponsoring Agencies," presented by **Dick Johnson** and "M + M" (Mission and Money), by **Archie Corriher**.

E. Renfro of OCA was another lecturer. He discussed "Federal Budgeting and Contracting" and was followed by **Jack Spurlock** who talked about "Personal Contracts."

Allen Ecker presented valuable information and guidance on "Proposals" and **Rudy Yobs** concluded the seminar series with a discussion of "CD with Non-Federal Organizations: such as state and local governments and industry."

Indications are the seminars were very worthwhile and beneficial. Attendees were asked to make written comments and suggestions and the consensus of their evaluation was that the series should be held periodically. Tentative plans are to repeat the seminars in January or February, 1977.

Station News to be Merged?

At this time we understand Ga. Tech administration is planning to merge several of their publications and are considering including the *Station News*. To be combined in a weekly newspaper for Tech are *The Whistle*, *Monday Action Memo* and the *Personnel* bulletins.

By also including the *Station News* the idea would be to broaden the base of interest, readership and coverage of the entire Tech community in one weekly paper.

Yobs Receives Two Appointments

Rudy Yobs, director of PTAL, has been named by Governor George Busbee to serve on the newly created Economic Development Council of Georgia. He was also named by the Board of Regents as a member of the Full Employment in Georgia Study Committee.

He was one of 15 Atlantans selected to serve on the Economic Development Council which was formed to develop policies and encourage economic growth within the state. The council will be chaired by Lt. Governor Zell Miller.

As a member of the Full Employment in Georgia Study Committee, Yobs will assist in preparing recommendations to the General Assembly through which full employment in Georgia may be achieved.

Rudy, a graduate of Clemson, holds a masters degree in Industrial Management from Georgia Tech where he has been employed since 1956. His background includes work in industrial research, state and regional economic development. He is also responsible for the Georgia Productivity Center which was established by the 1975 Legislature as a function of EES.

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EDL News

Bob Cassell and **Ila Benson** attended the 31st Annual Conference of the Southern Industrial Development Council October 23-26 in Nashville, Tenn. Bob and Ila have performed under contract to SIDC as its secretariat since 1967. Bob also is a past president of the corporation.

Bob Cassell was a lecturer at the University of Illinois' Basic Industrial Development Course in Monticello November 2. He also addressed the University of Alabama's 11th Annual Industrial Development Conference in Birmingham September 15. His topic was "Trends in Industrial Development."

Martha Ann Stegar attended the African Studies Association Annual Meeting in Boston, Mass., November 3-6 and spoke on "Assisting Small Industry and Generating Employment—A Ghanaian Example" as part of a panel on Appropriate Technology and Development.

Ross Hammond has been invited by Secretary of State Henry Kissinger to attend a National Meeting on Science, Technology and Development to be held in Washington on November 17. The purpose of this meeting is "to mobilize and focus America's best talent on the issues of technology and development, both in advanced and between advanced and developing countries."

Tze Chiang has received permission for the Government of the People's Republic of China to visit his parents in his native city of Foochow. This will be his first glimpse of his parents, both of whom are in their 80's, and his first trip to China since he left there 27 years ago. His visa is for four weeks, beginning in late November.

Welcome to **Jackie Brooks**, new secretary in EDL's Industrial Development Division.

Don Lodge departed for Korea and the Philippines on October 29 and will return November 22. While there, he will assist EDL's counterpart institutions in writing their final reports on their AID Small Industry Grant activities. He will also discuss various proposed appropriate technology and energy development projects with interested organizations.

Nelson Wall is scheduled to go to Egypt and Tunisia November 19-

December 6 to work on AID Rural Development projects in those countries.

Mary Edna Anders' book, *LIBRARIES AND LIBRARY SERVICES IN THE SOUTHEAST: A REPORT OF THE SOUTHEASTERN STATES COOPERATIVE LIBRARY SURVEY, 1972-1974*, is hot off the University of Alabama Press. The book is the end-product of a two-year survey project sponsored by the Southeastern Libraries Association.

Board of Regents Staff Member Has Office at EDL

Earlier this year, **Dr. L. Harlan Davis**, Director of International Programs and Studies for the Board of Regents, set up his office at EDL. Since then, he has been cooperating closely on EDL's international projects and has proved to be a valuable adjunct to the EDL staff. He departed Atlanta September 22 to work on an AID program development project in the Cape Verde Islands, returning in mid-October. Harlan's new secretary is **Judy Cadman**, who also works part time for EDL.

Welcome to EES...

David K. Plummer has joined the Electromagnetics Laboratory as principal research engineer. He will be working with **James Schuchardt** and **Robert Shackelford** under **J.W. Dees**, laboratory director.

For the past 19 years, Plummer was employed by the Calspan Corporation, Buffalo, N.Y. His background adds broad experience in contract research for federal, state and local government agencies, with emphasis in radar, microwave and weapons systems, crime control planning and computerized systems for the characterization and valuation of real property for tax purposes.

A native of Saint John, N.B. Canada, he holds a B.S.E.E. (1945) and M.S.E.E. (1953) from the University of New Brunswick, where he served as assistant professor in the Department of Electrical Engineer-

EDL Focuses on Economic Opportunities for Women

"How to Find the Job You Want" was the title of a workshop presented by EDL November 9 as part of an Atlanta Junior League conference on lifestyle options for women. **Tattie-"Tee Toe") Roan** and **Bob Collier** planned and led the workshop. Panel participants were **Betty Yarborough**, Reports & Procedures; **Bill Howard**, EDL; an employment counselor from the Georgia Department of Labor; and a vice president of an executive recruiting firm. A feature article about Tee Toe appeared in the *Atlanta Journal-Constitution* Sunday, October 24.

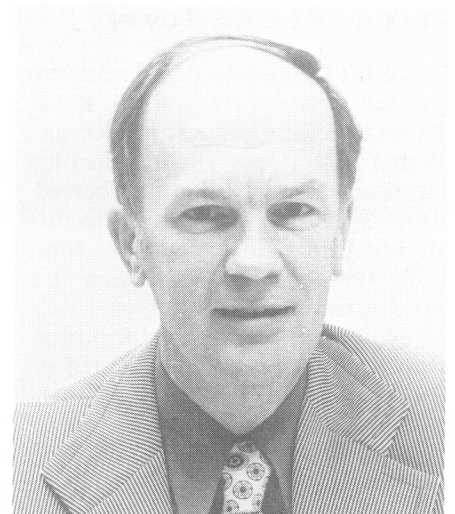
Systems and Technology Lab

Charles Hilbers, attended a workshop at the U.S. Army Foreign Science and Technology Center at Charlottesville, Virginia, on October 5 and 6.

John Stapleton, Mechanical Technician I, and **Keith Harris**, Assistant Research Engineer, joined the staff of the Systems Development Division in October. Welcome!

ing.

Plummer was also assistant research officer with the National Research Council of Canada, Atomic Energy Project Chalk River, Ontario, where he conducted experimental investigations related to heavy-water moderated reactors.



David Plummer

Double Pulse Laser Installed at EES

The Atmospheric Sciences Branch of ASL has just installed a double-pulse laser, the only system of its kind in the country.

Dr. Doug Davis, head of the branch, assisted by **Dan Philen**, tested the new laser in Orlando, prior to its arrival in Atlanta.

The new laser offers a higher pulse rate—20 times per second—compared to the older model lasers with 10 pulses per second. The double-rate allows more data to be collected in a shorter time span.

Located on the first floor (room 19) of the Baker Building, the laser will be used in future studies of atmospheric and global monitoring.

Interservice Committee Benefits EES Labs

Tom Jones was recently named chairman of the Interservice Committee on Technical Facilities for Southeastern United States. The organization is composed of members from colleges, universities and federal agencies who meet for the purpose of sharing technical and research equipment and facilities. EES has benefited from this group with the recent donation by ERDA of mass spectrometer to be installed in the lab of **Joe Lupton** of the Energy and Environmental Analysis Division. Also, **T.P. Lang** of ASL received over 600 lead bricks from ERDA for use in research activities.

Parking At C&S Tower

The GTRI has leased four reserved parking spaces at the C&S Bank Tower for use by visitors and Georgia Tech/EES personnel transacting business with the EES offices located there. Spaces designated for this use are numbers: 4, 5, 9 and 49. Persons using these spaces should sign the parking ticket indicating their name or name of guest and the space number. Tickets can be validated in the offices of Rudy Yobs (15th floor), Ross Hammond (16th floor) Hardy Taylor (17th floor) and Bob Zimmer (18th floor).

The EES Flower Fund

The EES Flower Fund, in existence for over a year, is the means through which EES members, as a collective and representative group, express sympathy and concern to fellow employees. Since the Flower Fund was established, over 30-employees and their immediate families have received flowers or a charitable donation.

The fund is mainly used for purchasing flowers or offering a donation upon the death of a staff member or any of his/her immediate family. The fund also purchases flowers for a staff member or spouse when ill and requiring hospitalization.

Donations to support this fund are entirely voluntary, but it is hoped that all staff members will participate. Send your contributions to the Reports and Procedures Office, Room 117, Baker Building.



New Employee

Dr. Kenneth Purdy recently joined the Waste Utilization Laboratory of PTAL as principal research engineer.

Purdy was formerly an Associate Dean of Engineering for Graduate Studies and Research as well as professor of the Department of Mechanical Engineering for Tennessee Technological University from 1973 to 1976. He holds a Bachelor, Masters and Ph.D. in Mechanical Engineering from Georgia Tech.

Prior to this he was employed at Tech as an instructor in the School of Mechanical Engineering. From 1957 to 1964 he worked as a research associate with the EES until joining Purdue University as an assistant professor in the School of Mechanical Engineering.

Purdy's principal areas of research at EES will include waste utilization, industrial and municipal refuse, pyrolysis technology and waste material drying.

Wind Energy Conversion at Georgia Tech

Research in Wind Energy Conversion Systems (WECS) at Georgia Tech began in 1974 with a benefit-cost methodology study for NASA on the application and use of wind generators. Previous work leading to this research included systems analysis, engineering economy and wind data analysis.

The study for NASA provided a capability to determine the relative merits of technological alternatives and to estimate the potential of wind power systems in the United States. This research was a combined effort of the Systems Engineering Division of EES and the School of Aerospace Engineering.

Under this program, the state-of-the-art of engineering analysis was assessed and benefit cost methodologies were compiled in a format providing particular information on alternative wind power systems.

The research included a survey and analysis of climatological parameters, gathering and analyzing data on surface winds, regional topographical features and monthly averages.

Additional research on wind generators involved Georgia Tech joining the JBF Scientific Corporation in assessing wind potential in 13 New England regions under an ERDA contract. Tech is responsible for the model development and model application necessary for the wind energy assessment, financial and cost-benefit analysis.

Plans are currently underway for installation of a 15 KW Grumman Windstream machine on the Tech campus for purposes of obtaining wind data statistics, developing assessment methodology and investigating a variety of problems oriented to the eventual practical implementation of a WECS.

Steve Bomar, **Charles Murphy** and **C. T. Brown** were in Albuquerque, NM, Sept. 28-30 for a Program Review meeting with sponsors, ERDA and Martin Marietta Corporation, on the Thermal Storage Subsystem Research Experiment Program.

Continuing Education Short Courses

The following Continuing Education short courses have recently been announced.

General Supervisors Short Course
November 29-Dec. 3, 1976
January 10-14, 1977
February 7-11, 1977

Personnel Management—
February 1-3, 1977
April 19-21, 1977

Solar Heating and Cooling for Homes and Buildings
December 7-9, 1976

Interested? Call 894-2400.

PTAL

Jerry Birchfield chaired the 1st Annual Conference on University Applied Research and Service in Washington, D.C., October 28-29. The conference, held at the Grammercy Inn, is a follow-up to a session held last year at Georgia Tech. Doris Willmer, PTAL, presented a paper on Appalachian Regional Commission research, "A Manual on Implementation of a Maintenance Management System for Streets and Roads in Small to Medium-Sized Local Governments" and a study on Energy Conservation in the Thomas County School System.

Richard Combes spoke on "Energy Conservation in The Poultry Industry" at the annual Dixie Poultry Convention held October 15 in Asheville, N.C. The convention is sponsored each year by poultry industry leaders in Tennessee, South Carolina, North Carolina and Georgia. Members of the State Legislature Sub-committee on Poultry Matters were briefed at the State Office Building. Questioning of poultry industry status was heavy; results of research conducted by PTAL were well received.

Lee Burks presented a paper entitled "Career Paths, Decisions Under Constraints" to a joint Engineering Foundation-S.W.E. sponsored conference in Easton, MD on October 11.

New External Advisory Committee Meets

The EES inaugurated the new External Advisory Committee with a two day introduction and orientation session, November 9-10.

The Committee is made up of nine distinguished people from industry, research institutes and academia who have been asked to give objective advise to EES from an outside view point.

They were briefed on EES operations by Dr. Don Grace, the lab directors and staff followed by discussions on a wide scope of our operations. The schedule included luncheons with staff members and a cocktail party and dinner Tuesday evening at the Cherokee Town Club.

The External Advisory Committee consists of

Dr. James C. Wiltse
Director, Research & Technology
Martin Marietta Corporation
Orlando, Florida

Dr. Eric Walker
Pennsylvania State University
University Park, Pennsylvania

Mr. Martin Goland, President
Southwest Research Institute
San Antonio, Texas

Dr. John Hallows, Jr.
Army Missile Command
Redstone Arsenal, Alabama

Dr. J. Ross MacDonald
Professor of Physics
University of North Carolina
Chapel Hill, North Carolina

Dr. Donald C. Burnham
Vice Chairman, National Commission on
Productivity and Work Quality
Westinghouse Building, Gateway Center
Pittsburgh, Pennsylvania

Mr. John McKelvey, President
Midwest Research Institute
Kansas City, Missouri

Mr. Jack R. Kelly, Jr.
Executive Vice President
Scientific Atlanta
Atlanta, Georgia

Mr. Gene Durren
Director, Corporate Engineering
Whirlpool Corporation
The Elisha Gray II Research
and Engineering Center
Benton Harbor, Michigan

AE Lab

Allen Ecker, Don Bodnar, Fred Cain, Dayton Adams, Barry Cown, and Johnson Wang attended the IEEE/AP-S Symposium and USNC/URSI Meeting held at the University of Massachusetts in Amherst, MA, October 11 thru 14. Dr. Ecker was Session Chairman; Mr. Adams, Mr. Cown, and Dr. Wang presented papers; Mr. Cain attended several meetings of the C95 and C95.4 Committees.

Lee Edwards and Don Bodnar visited the Missile Intelligence Agency (MIA) and the Army Missile Command (MICOM) in Huntsville, AL, to discuss topics of mutual interest in the area of near-zone radar cross-section.

Pat Burns was in Boulder, CO, October 5-7 for a near-field workshop.

Drs. Charles Ryan and Johnson Wang gave a final project review at Wright Patterson AFB on Electrically Small Antennas. The final report was also given to the sponsor.

Dr. Jim Fuller, Dayton Adams and Fred Cain visited the Ballistic Missile Defense Advanced Technology Center in Huntsville for a project review meeting and contract development.

Jim Toler and Cliff Burdett traveled to Research Triangle Park, N.C. on October 28 for project review and contract development meetings. The organizations contacted included the Army Research Office, the National Institute for Environmental Health Sciences and the Duke University School of Electrical Engineering.

EES Services

Tom Jones attended a meeting of the Inner Service Committee on Technical Facilities held in Starkville, Mississippi, on October 11-13.

This is a reminder to the EES staff to send all changes of home and campus address, changes in telephone numbers, and academic degrees that have been awarded to the Reports & Procedures Office so that the personnel files can be kept current.

PERSONALITY



Ed Flynt, Principal Research Engineer

Ed Flynt... Contributes Years of Experience to EES

When **Ed Flynt** joined the Engineering Experiment Station in 1948, divisions and branches were non-existent. "We just worked on one radar project...a military radar project for the Navy from 1948 to 1950," Flynt reflected.

Over the years, Flynt expanded his interest in engineering and radar and in 1961 was named head of the then Radar Branch. This branch has since been expanded to a division, and a further outgrowth of this expansion evolved in the formation of the Systems and Techniques and the Electronics Technology Labs.

Flynt served as head of the Radar Branch for two years, "I decided I didn't have time to do both administrative and application work on projects, so I returned to doing just the application." His successor was R.C. Johnson, now associate director of EES.

A native of Sparta, Georgia, Ed is a Georgia Tech graduate with a B.S. and M.S. in Electrical Engineering. After graduating from Tech in 1939, he began working for the Alabama Power Company, the firm where he had co-oped throughout college. Two years later he joined the Army and served in the Philippines and New Guinea until 1945.

Upon returning to the U.S., he worked for the Alabama Power Company until joining EES in 1948. "I saw their (Tech's) literature and thought it might be nice to come

back," Flynt said, "They offered me a job."

The majority of Flynt's work with EES's Radar Technology Division has involved radar application including such extensive project work as EROS where, during the past two years, Flynt has been designing and building project analog hardware.

Flynt received his masters degree from Tech in 1953. He and his wife Carolyn have two daughters, Joyce (now 21) and Alice (now 19). Both daughters are students at Furman University in Greenville where Alice plays in the marching band and both are members of the Furman orchestra.

Flynt is a senior member of IEEE and member of Sigma Xi, the national research organization.

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EM Lab News

Susan Wheeler is back to work after recovering from major surgery. To welcome her return to the EM Lab, the entire staff gathered at Susan's apartment for a wine and cheese party.

EML Director, **J.W. Dees** recently returned from a two week Convention of the Pan American Union of Engineering Association at Rio De Janeiro. Dees, accompanied by **Al Sheppard, Tom Stelson, William Sangster** and **Stothe Keziou**, presented a paper entitled "Monitoring Environment by Remote Satellite Sensing." The convention was attended by over 1,500 engineers and professionals from 25 countries who met to discuss views of engineering, education and pollution.

Six new co-ops have joined the EML this quarter: **Al Byers, David Kemp, Mike Lang, Steve Popielarczyk, David Zacharias** and **Reggie Ratcliff**.

Welcome to **David Plummer**, principal research engineer who has joined EML from a position with Calspan Corporation in Buffalo, N.Y.

Glenn Riley, who formerly announced his resignation from EML, has decided to remain with the Laboratory.

ETL News

Ron Wallace was in Washington October 18-20 to attend a conference sponsored by the Transportation Research Board of DOT on the use of CB Radio for Motorist Aid.

Richard Moss and **Ron Wallace** were in Washington on October 20 and 21 to visit the Defense Communications Agency and the U.S. Army Security Agency.

Richard Moss met with the Georgia Electric Membership Corporation on October 26 to discuss future communication requirements of Georgia EMC's.

Jimmy Woody, Richard Smith and **Red Jenkins** spent the month of October conducting grounding, bonding, and shielding surveys at the Atlanta Air Route Traffic Control Center in Hampton, GA and the Jacksonville, FL Air Route Traffic Control Center.

Ernie Donaldson, Spurgeon Robinette, and **Reg Curry** attended the Electromagnetics Susceptibility Seminar sponsored by the Naval Surface Weapons Center. It was held on October 20, in St. Louis, MO.

PTAL Hosts Energy Conservation Workshop

A workshop in Energy Conservation Systems for the Textile Processing Industry was presented by PTAL on October 19, in Dalton, Ga.

Sponsored by the Economic Development Administration (EDA), the one-day workshop included presentations by engineers from Georgia Tech who discussed methods of measuring and analyzing energy, ways of reducing energy waste in the industrial processes, and how to recover energy.

Speakers included PTAL's **Grant Curtis, Bob Fulford, John Dawkins** and Textile Engineering's **Dr. Fred Cook. Ron Pearl** served as moderator. **Elinor Plowden** of PTAL and **Bill Darley** of EDL were also present.

Over 30 representatives from various sectors of the textile industry in North Georgia attended the workshop.