

Station News

Georgia Tech Engineering Experiment Station

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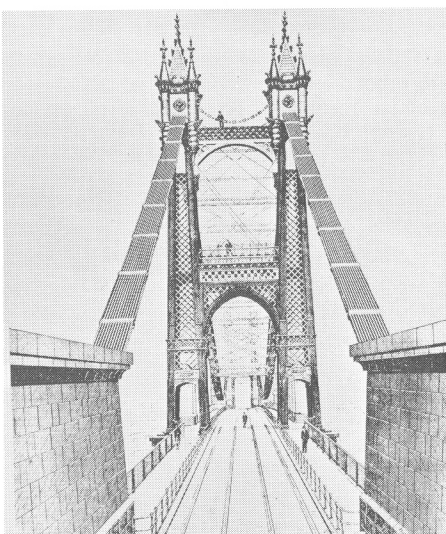
Bridge Paints Get EMSL Study

"London bridge is falling down" . . . and many more in the United States, too, according to the Federal Highway Administration. They estimate that 23% of U.S. bridges are structurally deficient. Corrosion is the main culprit.

A project in the Energy and Materials Sciences Lab (EMSL) holds promise for alleviating this problem in the future. EMSL researchers have investigated reasons for the failure of high-performance coatings or paints to last as long or protect as well as they are supposed to, and are in the process of developing criteria and procedures for increasing their reliability when used on highway bridges.

Under severe environmental conditions — salt spray, deicing chemicals, industrial air pollutants, etc. — traditional alkyd or oil-based paints last only three to four years. In recent years, the paint industry has come up with new high-performance coatings that should last at least ten years, a real boon in these days of high labor and maintenance costs. The best of these are the inorganic zinc-rich primers. They provide a galvanic protection system for steel surfaces because the zinc corrodes first.

These coatings are trickier to handle than the traditional barrier-protection type paints, however. Surface cleanliness is extremely important; rust must be sandblasted off to restore the metal to near white condition, and other contaminants must be removed before painting. Once applied, the primer must reach the proper state of cure before the topcoat is applied, or the topcoat will peel off. This type of coating reacts with the moisture in the air to cure, and one problem is, job inspectors don't know how to determine



Iron and steel bridges like this one formerly spanning the Monongahela River at Pittsburgh need protection from corrosive environmental agents. (From the files of the National Museum of American History, Smithsonian Institution)

when the proper cure has been reached. The time may vary from one day to three weeks, depending on environmental conditions.

Phase 1 of the \$400,000 project, sponsored by the Federal Highway Administration, began in February 1981 with a review of state-of-the-art practices in the use of high-performance coatings on steel bridges. Led by Chuck Ray, who has since left EES, the EMSL researchers found that premature failures generally were due to deficiencies in the application of the paints, not the paint materials themselves.

Phase 2, which began last December, involves laboratory testing to come up with quantified acceptance criteria and specific procedures for inspection in the field to reduce the subjectiveness in determining work quality. Project Director Tom Starr and team members Les Henton, Stan Lewis and Wayne Case will perform four principal tasks.

(Continued on page 2)

EDL Starts Rural Assistance Program

The Economic Development Lab (EDL) has started a second minority assistance program under sponsorship of the Minority Business Development Agency (MBDA) of the U.S. Department of Commerce. The program will help minority-owned businesses and minority entrepreneurs in the rural areas of five southeastern states: Alabama, Georgia, Mississippi, North Carolina and South Carolina. The new Rural Assistance Program (RAP) will provide direct management and technical assistance as well as brokering services to qualified firms and entrepreneurs.

"Our program includes such services as loan packaging, marketing assistance, sales strategies, and help in all areas of production," explains RAP Director Jim Thomas. "RAP also can serve as a broker for its clients, linking them up with new market, business and financing opportunities.

"This represents a new thrust for MBDA," Thomas states. "The idea is to bring the type of services to minority businesses in rural areas that MBDA's Business Development Centers have been providing to firms in metropolitan areas." The Georgia Tech RAP is one of three such centers established by MBDA. The other two are in Dallas and San Francisco.

Thomas and his staff are trained in solving the problems of small, disadvantaged businesses. They would especially like to work with firms involved or interested in growth areas such as high technology, ventures that will generate new jobs, or nontraditional industries for minorities. They also want to hear from majority organizations that would like to do business with minority firms.

(Continued on page 3)

New RAIL Short Course Is A Hit

The Radar and Instrumentation Lab was right on target again with its new Radar Cross Section Reduction short course, held January 25-27 at the Cobb County Research Facility. It had 77 attendees and over 60 people on the waiting list.

Gene Knott was the technical coordinator, and the following RAIL personnel were instructors: Bob Hayes, Archie Corriher, John Schaeffer, Mike Tuley, Harold Bassett, Margaret Horst, Bruce Rakes, David Stallings, Gene Greneker, Clark Butterworth, Charlie Luke and Brian Hudson. Fred Dyer (SEL) and Pat Montgomery (ECSL) also assisted as instructors. V. V. Liepu, University of Michigan, was guest lecturer.

The classified short course was co-sponsored by USAMICOM, Redstone Arsenal, Alabama, and was well attended by both DOD and industrial personnel. Because of the success of the course and the interest shown by those on the waiting list, the course will be offered again as soon as a cosponsor is found.

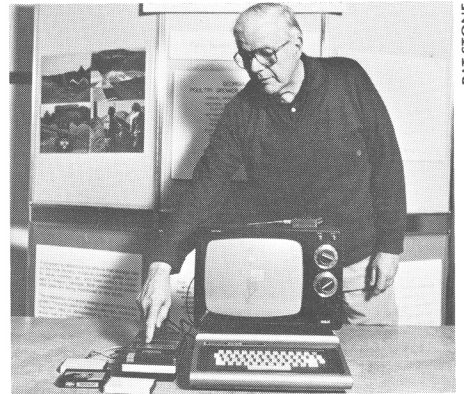
Paints *(Continued from page 1)*

"First we want to determine the effect of ambient conditions and application techniques on the cure rate and the coating performance, using environmental chambers for controlled testing," Starr said. "One parameter we'll measure is the degree of porosity. We think this may be controlled by the cure rate and may be an important factor for successful topcoating. As for surface cleanliness, we'll identify contaminants, decide how best to test for them, and determine which have the greatest effect on paint performance."

The Tech team will evaluate the empirical tests of paint hardness or cure traditionally used by field inspectors, such as scraping with a coin or pencil, or rubbing with a solvent, to determine their applicability to high-performance coatings. They also will evaluate field methods for detecting surface contaminants, perhaps involving a chemical test kit or a portable compact reflectance spectrometer.



ALAN DAVID



PAT STONE

Tech Shows Expertise at Exhibits...Left: At SOUTHCON/83, Electrical Engineering's self-contained talking robot drew a crowd to the Tech booth, designed by Research Communications. Right: TAL's Agricultural Technology Branch displayed working models of several of its research projects at the Southeastern International Poultry Trade Show, including this farm computer system. Both shows were at Atlanta's World Congress Center in January.

Professional Activities

ECONOMIC DEVELOPMENT LAB

Johanna Williams has been elected secretary-treasurer of the Georgia Association of Behavior Analysis.

Jim Burson has been nominated for the National Board of Directors of the American Industrial Hygiene Association.

Phil Loveless recently addressed the DeKalb County Mental Health and Mental Retardation Facility staff on industrial productivity improvement possibilities in mental health and retardation work activity centers.

ELECTRONICS & COMPUTER SYSTEMS LAB

At the Automated Command and Training System Users Group Workshop hosted by the Command and General Staff College at Ft. Leavenworth, Kansas, on January 27, **Jim Coleman** presented an overview of microcomputer graphics for military applications; he also was co-monitor and presenter at the Workshop on Graphics Applications and panel member on the General Forum discussion.

Jim Mahaffey presented a paper in the session on Computerized Information Systems for Nuclear Power Applications at SOUTHCON/83 in Atlanta, January 18-20.

ENERGY & MATERIALS SCIENCES LAB

J.D. Walton, Steve Bomar and **Joe Harris** attended the 7th Annual

Conference on Composites and Advanced Ceramic Materials at Cocoa Beach, Florida, January 16-19. Walton and Bomar chaired sessions and all three presented papers.

OFFICE OF THE DIRECTOR

Jim Wiltse and **J.W. Dees** (OCA) presented a paper at the 7th International Conference on Infrared and Millimeter Waves held in Marseille, France, February 14-18. Wiltse also organized a session on Millimeter Wave Applications for SOUTHCON/83, held in Atlanta January 18-20; his paper was read in his absence by **Charlie Brown**.

SYSTEMS ENGINEERING LAB

At the SOUTHCON/83 meeting in January, **Tim Strike** presented a paper on "Reliability, Power/Speed Factor Improvements Using PALs and EEPROMs," and **Kenneth Perry** gave a paper on "VLSI Architectures for Adaptive Signal Process."

TECHNOLOGY APPLICATIONS LAB

Carol Aton made a presentation on "High Technology: Implications for Business Educators" at the 20th Annual Southeastern Business Education Conference at the University of Georgia, February 4. She has been nominated by the Society of Women Engineers for the "Young Engineer of the Year" award.

Mike Brown and **Hank Jackson** spoke at a workshop on Improving Steam Boiler Operating Efficiency on January 26.

Rural (Continued from page 1)

The program complements EDL's Technology Utilization and Commercialization Center (TUCC) program which has been ongoing under the direction of Ed Bethea since 1977. TUCC works primarily with inventors. Offices for RAP and TUCC personnel are located on the top floor of the Hinman Building in the suite formerly occupied by ATDC.

Anthony DeCurtis

EES Schedules Short Courses

Al Sheppard (VP-Research) and Jim Wiltse (OOD) are academic administrators of two continuing education courses in March:

March 7-8. **Laser Technology and Systems Applications.**

March 9-11. **Infrared Technology and Applications.** Assistant administrator: Bob Shackelford (EML). Senior instructors will include Dave Schmieder and Don Blue (EML).

The Economic Development Lab is involved in six continuing education courses over the next couple of months, four of them in the field of occupational safety and health. The courses and EDL instructors are:

March 21-25. **Asbestos Symposium.** Eight courses. Faculty includes Jim Burson, Bill Ewing, Ken Johnson, Mike Lowish and William Spain.

March 22-24. **Industrial Toxicology.** 3rd annual. Course directors: Jim Burson and Phil Williams.

March 27-April 1. **Basic Economic Development.** 16th annual. Course directors: Bob Cassell (retired) and David Clifton. Faculty includes Bill Darley and Bill Howard (OOD).

April 12-13. **Formaldehyde.** Faculty includes Paul Middendorf and Phil Williams.

April 13-15. **Industrial Noise Control.** Faculty includes George Lee and Mike Luster.

April 19-20. **Effective Technical and Professional Writing.** Faculty includes Anthony DeCurtis.

For brochures or further information, contact Continuing Education, ext. 2400.

STATION TO STATION

Recruiting: Who Is Responsible? You!

The acquisition of quality personnel is the single most important factor in EES's future. Certainly we must gain new sponsored work and we must perform on current contracts. However, the key to our future is **people**, the fine **people** who are already here and those who will enhance our existence by joining in our efforts.

Every member of EES must be constantly on the lookout for people that we might like to have on our team. You may know these people personally; you may read about them in magazines, alumni news publications, newspapers, etc.; you may hear them speak or read something they wrote; you may meet them at the church social or at a convention... the list is endless, but the point is **you** must be alert to your responsibility in helping EES grow.

What do you do if you **think** you know somebody we **might** want to know more about? Call your recruiting office... Pat O'Hare, ext. 3662.

Strictly Personal

ECONOMIC DEVELOPMENT LAB

The Trade Adjustment Assistance Center has hired **Frank Mewborn**, research associate II, and **William Plouffe**, senior research associate; **Verna Hankins** has resigned as staff assistant.

Johanna Williams has been appointed associate branch head of management services in the Business Development Division. **Melanie Meeker** has joined the Division as a staff assistant.

Joan Meeks is the new vice-chairperson of the Georgia Tech Women's Forum.

ELECTRONICS & COMPUTER SYSTEMS LAB

The Command and Control Branch welcomes a new senior secretary, **Diana ("Dede") Morgan**.

RADAR & INSTRUMENTATION LAB

Congratulations to **Tracy Wallace** and **Bruce Huitt**, who recently graduated from Georgia Tech and are now working as full-time research engineer I's.

Helen Williams has replaced **Sandra Cuttino** as a senior secretary in the Modeling and Simulation Division.

Anthea Coster is a new research scientist II and **Harry Haas** is a new research engineer I at RAIL.

SERVICE GROUPS

Accounting: **Kim Pierce** has replaced **Joy Lacy** as accounting clerk.

Mechanical Services: **Anthony Angerami** is retiring February 23.

Personnel Services: **Molly Bell** is transferring to become administrative secretary to **Gordon Harrison**.

Supply Services: Welcome to **Margaret Wentz**, clerk IV, and **Arlene Kupitz**, clerk III.

SYSTEMS & TECHNIQUES LAB

Carrie Floyd is a new senior secretary in the administrative office. **Brian Keith Rainer** is a new research engineer I in the Microwave Systems Division.

Barry Mitchell and his wife, Jana, are the parents of a baby girl, Ellen, born in January.

SYSTEMS ENGINEERING LAB

This month, SEL said good-bye to **Andrew Lipscomb** and **Deborah Keais**.

SEL has a raft of new employees. In the Defense Systems Division, they are **John S. Gedymin**, **Chris B. Fowler** and **John B. Savage**, all research engineer I's, and **Edward L. Masters**, research engineer II.

The Electronic Support Measures Division has gained two research engineer I's: **John P. Couch** and **Joe Brooks**. **Michael D. Furman** is a new research engineer I in the Advanced Programs Office. In the Concepts Analysis Division, there are four new research engineer I's: **Ivan L. Howitt**, **Jane P. Batson**, **Gail E. White** and **Laura A. DiMillo**. **Bonnie J. Karr** has joined the Eglin Field Office as a senior secretary.

Retirees Given Send-Off Party

EES honored four retirees at its third semiannual Retirement Reception on February 1: John H. Murphy and Clarence J. Swafford of the Energy and Materials Sciences Lab, Anna Lee Gasque of Research Security, and Martha L. Shoemaker of the Printing and Photographic Center.

John Murphy began working at EES in 1953, while studying for his master's in mechanical engineering at Georgia Tech. He received his doctorate from Tech in 1963. From 1957-1973, he taught a wide variety of courses in the Mechanical Engineering Department and developed a graduate program in high temperature design. He resumed working part time with EES's High Temperature Materials Branch in 1970, and in 1974 went full time with EES as a senior research engineer. During these latter years, he made a significant contribution to Tech's pioneering work in pyrolytic conversion of biomass to synthetic fuel. John has been in poor health for the past 18 months or so, and his colleagues wish him improved health in the future.



Bob Cassanova (left) presents C.J. Swafford with mementoes of his career: his solar mirror field alignment device and his hard hat.

Research Technologist **C.J. Swafford** has been one of EMSL's most valued workers at the solar site. When the 550-mirror solar thermal test facility was installed a few years ago, C.J. calibrated and adjusted every one of those mirrors, and he has since worked on heliostat tracking improvement. He has designed casting and machining facilities for radomes; he also has



Martha Shoemaker with three men who "worked for her": (L-R) Otis Rodgers, Photo Lab manager, plus retirees Moe Hedin, former assistant manager, and Ed Garrett, former manager.

designed and supervised construction of heat exchangers, solar flux scanners and redirectors. Although C.J. has been at Tech since 1951, his expertise will still be available on call, "hourly as needed."



Al Becker and Anna Lee Gasque admire the plaque given to her at the EES Retirement Reception.

Anna Lee Gasque helped Al Becker start Tech's security function on a formal basis 12½ years ago, and recently retired as his administrative assistant. She brought to the job 20 years' experience in administrative work as a Wac in the Army, including dealing with classified material. Anna Lee has seen her office grow from a three-person staff that handled reports control, property and communications, as well as security, to its current staff of eight handling security matters alone. In presenting her retirement plaque, Al praised her for her "tenacity and knowledge," and commented that she had phoned in late to work only twice during her years at Tech, once when her car burned up and again to say she had "fallen off the altar" and sprained her ankle!

Martha Shoemaker worked her way up in her 31 years at the Photo Lab from secretary through drafter to head of the layout department and finally to assistant manager. Former manager Ed Garrett commented: "In 1952, I hired a young, vivacious redhead, and today she is retiring — still a young, vivacious redhead!" That sums up Martha's personality — spunky, energetic, outgoing and client-oriented. He recalled hiring her on a Thursday. The following Monday, she called to say she wouldn't be in — she was out of town. When Ed asked, "Where?" she replied, "Puerto Rico." Every Friday after that," said Ed, "I always asked Martha if she would be in town on Monday."

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