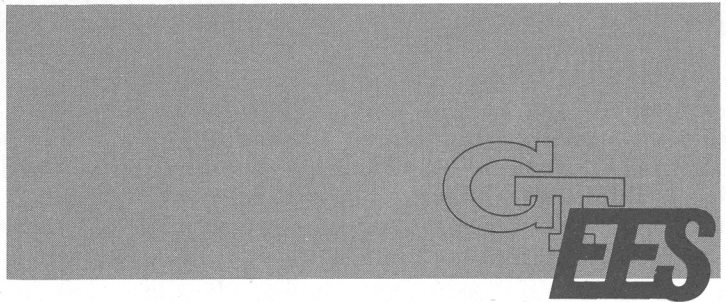


STATION NEWS



ENGINEERING EXPERIMENT STATION • GEORGIA TECH

VOLUME 5 NUMBER 5

JUNE, 1976



Joan Wood, PTAL, explains the structure of a solar rock-bed collector installed on a layer farm outside Cumming, Ga.

PTAL Sponsors Tour of Digester, Solar Collector

A new poultry waste conversion pilot plant in Cumming, Ga., designed and operated by the Productivity Systems Division of EES, was toured by a group of 60 legislatures, reporters, energy conservationists and poultry federation members on May 20.

The facility, known as an anaerobic digester, was designed to digest $\frac{3}{4}$ ton of chicken manure per day through a biological conversion process which generates by-products of feedstock, fertilizer and synthetic natural gas (methane).

Under the direction of project program manager, **Jim Lowry**, PTAL, the pilot plant was constructed with a \$50,000 grant from the Georgia Department of Agriculture under the guidance of the Georgia Poultry Federation.

PTAL technician design and operational assistance was provided by **Dan O'Neil**, **John Dawkins** and **Al Poulin**.

According to Lowry, the digester represents efforts in energy conservation and revenue generation for thousands of Georgia layer farms. As Georgia leads the nation in the total production of eggs, broilers and turkeys, the problem of disposing of almost 14,000 tons of manure per day is demanding. "The anaerobic digester was designed to alleviate this problem," Lowry commented.

The digester, to be tested for 4 to 5 years, will eventually produce marketable by-products including methane gas used to supply heat for broiler houses and to run a generator, while the fertilizer (sludge) has potential as a source of Vitamin B complex, and as cattle feed and soil supplement.

Those EES members in attendance included: **Rudy Yobs**, **Jerry Birchfield**, **Dan O'Neil**, **Bette Justice**, **Richard Combes** and **Al Poulin**.

In addition, the visitors viewed an experimental solar rock-bed collec-

tor installed on another layer farm outside Cumming.

The unit was designed by principal investigator, **Joan Wood** and **Grant Curtis**, both of PTAL.

The structure measures 208 feet in length and 16 feet high. The collector provides heated air for the layer houses.

Dr. Walker to Present Seminars to EES Staff in July

A series of lecture-seminars on professional self development will be presented July 13 by the distinguished engineer and scientist, Dr. Eric A. Walker.

The meeting will be held at 2 p.m. in the Ben Dasher Auditorium of the Electrical Engineering Building. All EES professional staff members are invited to attend.

Dr. Walker served as director and vice president, science and technology of the Aluminum Company of America. In 1970 he joined Alcoa after retiring as president of The Pennsylvania State University.

As an engineer, scientist and educator, Dr. Walker's experience covers such diversified fields as business administration, government, oceanography, power transmission and public service. He has been a key adviser to the federal government through service on many technical and scientific advisory panels.

Additional information on the seminars can be obtained from Bill Howard, EDL, 3844.

ANEQUAL OPPORTUNITY AND AFFIRMATIVE ACTION EDUCATIONAL INSTITUTION.

Dr. Donald Grace Visits EES

Dr. Donald J. Grace who is expected to join the EES as new Director in early August made another visit to Tech during May 13-14. He was able to talk with each lab director, visit some facilities and meet with many staff people.

Dr. Grace is coming to EES from the position of Director, Center for Engineering Research at the University of Honolulu. He has served there since March, 1973. Prior to that he was Director of Research with Kentron Hawaii Ltd. for three years. From 1951 to 1969 he was at Stanford University where he had been Associate Dean, School of Engineering, and Director, Sanford Instructional Television Network, as well as senior researcher in the Stanford Electronics Laboratories and Director S&T Lab. He has also been an EE professor and a design engineer.

Don Grace received his BEE at Ohio State University in 1948, his MSEE at Ohio in 1949 and his PhD EE at Stanford in 1962.

At the U. of Hawaii he has been responsible for all functions of the engineering research facility as well as being involved in research, teaching and public service activities. He has had a major responsibility for developing new research programs.

Among his research activities are the Environmental Conferences on the Public Understanding of Science for Hawaii, Ocean Thermal Energy Conversion, Wind Energy Conversion Systems and other programs. He has published over fifty articles and papers.

Dr. Grace has been married for 28 years and has two teen age boys. He looks forward to the move to Atlanta, getting his family settled and joining the Tech/EES community. The staff of EES is ready to welcome Dr. and Mrs. Grace and is anticipating the new leadership with pleasure.

EES PROMOTIONS FOR 1976-77 AUTHORIZED

Authorization for promotions to higher professorial ranks for 431 faculty members at the 31 University System institutions presently in operation was voted by the Board of Regents at the April 14 meeting.

The new ranks will become effective in the 1976-77 fiscal year that begins next July 1.

Recommendations for faculty promotions to the various professorial ranks are made to the Board of Regents annually according to criteria set forth in the policies of the Board. In recent years, the promotions have been considered and authorized at the regular April meeting.

The promoted EES members and the ranks that they will have in 1976-77, with the highest degree and the current professorial rank held by each, are:

PRINCIPAL RESEARCH ENGINEER/SCIENTIST — Steve Herren Bomar, Ph.D., senior research engineer; Joseph Lee Edwards, Ph.D., senior research physicist; Charles Edward Ryan, Jr., Ph.D., senior research engineer;

James Curtis Toler, M.S.E.E., senior research engineer; Rudolph L. Yobs, M.S., senior research scientist; and Robert P. Zimmer, M.S.I.M., senior research engineer.

SENIOR RESEARCH ENGINEER/SCIENTIST — Stephen P. Brookshire, M.S.E.E., research engineer; Charles P. Burns, M.S.E.E., research engineer; William J. Dittman, B.S.M.E., research engineer; Jerry Joseph Heckman, M.E., research engineer; James W. Johnson, B.S., research physicist; Frank Robert Williamson, Jr., M.S.E.E., research engineer; and Douglas E. Wrege, Ph.D., research scientist.

RESEARCH ENGINEER/SCIENTIST — Everette Clifton Burdette, M.S.(76), assistant research scientist; Anne Rosselot Clayton, M.S., assistant research scientist; Eugene F. Greneker, M.S.(76), assistant research scientist; Pinhas H. Har-Oz, M.S., assistant research engineer;

Kathryn Vance Logan, B.Cer.E., assistant research engineer; Patrick H. Ryan, Jr., M.S.(76), assistant research engineer; Hadley William Wellborn, Jr., B.Cer.E., assistant research engineer; and Jimmy A. Woody, M.S.E., assistant research engineer.

EDL NEWS

The Economic Development Laboratory has been invited to participate in an international Meeting of Experts in Intermediate Technology to be held in Mexico City June 21-26. The meeting is being sponsored by the Center for Economic and Social Studies of the Third World which recently was established by the President of Mexico with United Nations support. One of the Center's first research projects will be in the field of transfer and appropriate use of technology.

The Area Development Division (ADD) of EDL is hosting the June meeting of the Board of Directors of the GTRI, to be held in Savannah June 5-7. The Board will view an audiovisual presentation of the work of the field offices, visit two companies that ADD helped establish or expand, and tour the Savannah port facilities.

Mardis Price has resigned from EDL effective June 22 to become Manager of Industrial Engineering at Riegel Textiles in Trion, Georgia.

Dinna Gorman has replaced Sheila Carson as secretary in EDL's Community Development Branch.

Comments on entrepreneurship by **Ben James**, EDL, were published in the October-December 1975 issue of the **Small Industry Journal** published by the Institute for Small-Scale Industries of the University of the Philippines as part of a panel discussion focusing on the Filipino entrepreneur.

STATION NEWS

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J. A. Donovan, Editor	3405
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Nancy Price, Assoc. Ed.	3500
Albert H. Becker, Reproduction	3570

Applied Sciences Lab

SEMTD

J. D. Walton attended the American Ceramic Society Meeting in Cincinnati, May 3-5. He also attended the ERDA Symposium and Workshop on the 5 MW Solar Tower Program held at the University of Houston May 17-19, and presented a paper on the Georgia Tech Solar Test Facility.

Steve Bomar, and **J. D. Walton** visited with **Black & Veatch**, Consulting Engineers in Kansas City to discuss program plans on the Georgia Tech detail design of the 5 MW Test Facility. Bomar was also in Albuquerque, NM to observe initial testing of the one megawatt solar boiler.

Steve Bomar and **C. A. Murphy** visited **Thermxchanger, Inc.**, an Oakland, CA heat exchanger firm. **Thermxchanger, Inc.**, is building three heat exchangers which will be used in SEMTD's Thermal Storage Subsystem Research Experiment.

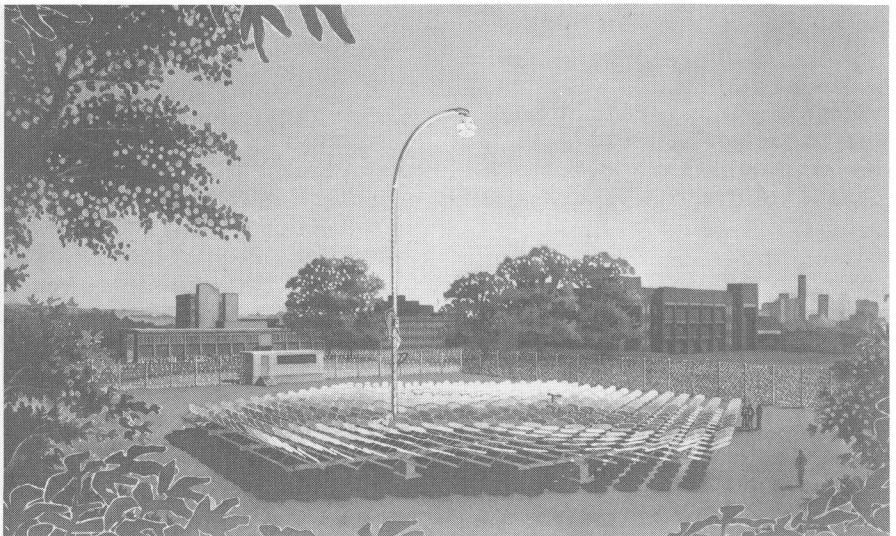
They also attended a Quarterly Program Review for the Solar Thermal Pilot Plant Program at **Martin Marietta Corporation** in Denver on May 20-21.

R. W. Larson and **H. L. Teague** visited **Pittsburgh Plate Glass Co.**, Pittsburgh, PA on May 25. Possibilities of mirror research to be conducted by PPG on the Georgia Tech 400 KWth Solar Test Facility were discussed.

Dr. C. T. Brown, **Dr. J. H. Murphy**, **Wayne Cooper**, **Bob Goodman**, **C. J. Swafford**, **Dr. S. H. Bomar, Jr.**, and **J. D. Walton** will be in Odeillo, France this summer for the testing of the one megawatt solar boiler. SEMTD was instrumental in the design of the solar boiler and in the preparation of the French Solar Furnace for these tests. The boiler itself was built by **Martin Marietta Corporation**, Denver. Testing of the boiler will be conducted at the French CNRS Solar Furnace located in the Pyrenees.

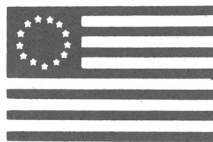
SSS Div.

Dr. R. K. Hart attended the Southeast Electron Microscopy Society Annual Meeting in Orlando, Fla. on May 21-22.



400 KW Solar Thermal Test Facility to be Built on Campus

The Solar Energy and Materials Technology Division of the ASL has been funded by the Energy Research and Development Administration to build a solar thermal test facility. The objectives of this program are to transfer solar energy technology developed in Italy to the United States and to provide an important test facility in this country.



AS Branch

James L. Hubbard also attended the SEEMS Annual Meeting in Orlando and presented a paper titled "The Identification of Asbestos Using TEM, Diffraction, and SEM X-Ray Analysis Techniques."

Jeff Tiller presented a paper entitled "Regression Study Between Solar Radiation and Electricity Consumption" to the Southeastern Symposium on Systems Theory held in Knoxville, TN, April 26-27.

Stephen W. Day also presented a paper on "Air Pollution Costs of Fossil Fuel Electric Power Plants" to the Symposium in Knoxville, April 26-27.

The 400 KWth facility will be built on a site located West of the Civil Engineering building; the proposed plant will follow the same general design used in Genoa and will be supplied by **ANSALDO, S.p.A.**, an Italian industrial organization. **ANSALDO** will also supply professional services to assist in plant start-up and training of United States personnel.

The facility is expected to be in operation at Georgia Tech in late 1976; site survey and soil testing tasks are scheduled to take place in June.

T. F. Craft attended the Hearings of the Commission on Rural Water at Columbia, SC on May 11.

Stephen Havlicek attended meeting of the Southeastern Section of AWWA in Savannah, GA, April 25-28.

Billy Livesay presented a paper entitled "Mechanical Behavior of Elastin in Saline Solution" to the American Physical Society, April 1, in Atlanta.

B. R. Livesay and **E. J. Scheibner** presented a paper to the Symposium on Storage Reliability of Missile Materials at Redstone Arsenal, May 11-12.

PTAL NEWS

Rudy Yobs and **Jerry Birchfield** met with representatives in Washington D.C. on May 26 and 27.

Welcome to **Nancy Eggert** who joined the Productivity Systems Division as secretary to **Jim Lowry**.

Electronics Technology Laboratory

Hugh Denny traveled to St. Louis, MO. April 14 to attend a FDA-sponsored public hearing on proposed EMC Standards for Medical Devices.

Doug Robertson, Hugh Denny, and **Ernest Donaldson** went to Egin Air Force Base on May 4, to discuss EMC testing and procedures in connection with the SEMI Program.

Ernest Donaldson attended the 38th National Meeting of the Society of Automotive Engineers, Inc. in Seattle, May 5-7. He was a member of SAE Committee AE-4H, a special technical committee on shipboard EMC.

Hank Jenkins attended a Workshop on Electrically-Small Antennas on May 5-7 which was held at Ft. Monmouth, N.J. He presented a paper entitled "Scale Model Test Results for an Electrically-Small Loop on a UH-1D Aircraft".

Doug Robertson attended two seminars entitled "How to Improve Your Government Proposals" and "Proposal Preparation Using the Modular Technique" held at the Atlanta Airport Holiday Inn on May 6 and 7.

EES sponsored a course in Grounding of Electronic Systems at the Tech campus May 11-13. The course explored common grounding practices and problems arising from inadequate grounding. **Hugh Denny**, head of the Electromagnetic Compatibility Group of ETL, conducted the course. Mr. Denny also presented papers entitled "System Design", "Network Configurations", "Network Design", "Ground Loop Noise", and "Shipboard/Airframe Considerations".

Other ETL staff members participating in the short course were: **Jimmy A. Woody, Ernest E. Donaldson, Spurgeon L. Robinette, Bernard M. Jenkins,** and **Richard S. Smith.** There were approximately 20 attendees at this short course.

The third FAA/Georgia Tech Workshop on Grounding of Electronic Systems was held on the Tech campus April 27-29. Sponsored by the Federal Aviation Administration, Georgia Tech, and the Atlanta Section of IEEE, the workshop

objectives were to increase the understanding of the principles and practices of grounding in large electronic systems. **Hugh Denny** was a member of the Planning and Program Committees and chaired the session on April 29. He presented a paper entitled "Permafrost Grounding — A Review of Soviet Practices", and **Jimmy Woody** of ETL presented a paper entitled "Bonding Measurement Techniques".



Georgia Forms Solar Energy Association

Tour Of Solar Homes Planned

The Georgia chapter of the Solar Energy Association has been formed with the election of officers including four Georgia Tech members: **Dr. A. P. Sheppard**, associate vice president for research; **Dr. J. R. Williams**, associate dean of engineering for research; **Frank Clarke**, associate professor architecture, and **Elinor Plowden**, contracts office.

The organization, formed in January 1976, meets the last Thursday of each month at the Golfland Motor Lodge on I-85 North. The next meeting is scheduled for June 24 at 6 p.m. with the business session and program at 8 p.m.

Attendance has ranged from 50 to 100 members. Programs include guest speakers and multi-media presentations on solar energy projects in the state and around the country.

The group has scheduled an open house of a solar home owned by builder Kerry Keith on June 13. The public is invited to attend the opening at 4052 Loch Highland Pass, Roswell.

The July meeting will feature a tour of the solar energy projects at Georgia Tech. For further information contact Elinor Plowden, 894-4820.

Retirement and Awards For EES Employees

On May 20, the Faculty Retirement and Awards Dinner at the Student Center Ballroom honored 28 Tech retirees. Among those feted were seven people from the EES staff; **Maurice W. Long, Robert S. Ingols, James E. Dameron, James R. Parker, Leander C. Prowse, Lynwood A. Stapleton** and **Janie Lovern.**

There were also 24 Tech people who received the Gold-T 25-year award including **H.A. Corriher, Frederick Dixon, W.L. Reagh, J.E. Rhinehart, C.E. Smith** and **R.D. Wetherington**, all from EES.

The EES staff joins in warm wishes to all of our retirees and congratulations to the Gold-T "old timers".

The AEL is happy to welcome **Beverly S. Rice**, an Assist. Res. Scient., and **Peter J. Hedin**, an Electronics Technician II, who are new members of the Radar Technology Div. Also, **Neil B. Hilsen**, a Senior Research Engineer, has joined the Systems Engineering Div.

Mary Lupton, secretary ASL, was awarded an honorary pin by the Gesneriad Society International, commemorating her work with African Violets. The award was presented to Mary by Mr. & Mrs. C. Stoehr of Greenwood, Indiana. Mrs. Stoehr is National Convention Chairman and Associate Editor of the organization's publication.

Four EES Men Participate in Atlanta Ham Festival

Alan Bridges, Cliff Burdette, Dr. C. E. Ryan and **Jim Stratigos** presented papers at the 1976 South-eastern Division of the American Radio Relay Leagues (APRL) and Atlanta Ham festival, held at the Royal Coach Motor Inn, June 12 and 13.

Alan Bridges, AEL EMED, was responsible for organizing the technical forum which included discussions of antennas, amateur television, materials, microprocessors, digital circuits, the history of amateur radio and the transition from C.B. to amateur radio.

Continuing Education Notes

R. E. Collier

Successful short courses that are widely advertised offer opportunities for increasing regional and national recognition of Engineering Experiment Station programs. In 1975 campus policies were changed to stress continuing education as a regular part of faculty responsibilities.

The EES staff responded to this change in policy in FY 75-76 by increasing the number of short course offerings from three to six and by increasing the gross income of these successful offerings to \$47,000 this fiscal year.

A goal of \$89,000 has been set for FY 76-77 with some eight courses already scheduled or in the advanced planning stage. In a recent memorandum, Dr. Shepard urged each Laboratory to develop and schedule at least one course in continuing education during the next fiscal year. Usually two or three courses must be developed and advertised to insure a reasonable guarantee of success of one new course.

In a research organization such as EES where teaching is not the primary function, course development depends mainly on the *entrepreneurial spirit* of the individual scientists. The "rewards" are there but they are not dispensed freely. Further information can be obtained by calling Bob Collier at 3820.

TEACHERS' RETIREMENT CHANGES

The Institute has been advised by the Teachers' Retirement System of two changes effective July 1 which will affect TRS members. These are: 1) an increase in the multiplier used in the retirement formula from 1.76% to 1.78%, and 2) employer contribution rate increase from 8.396% to 9.1%. The employee contribution rate will remain at 6%.

JANIE LOVERN RETIREMENT HONORED



Janie Lovern and some of her many friends and colleagues enjoy the ASL party in her honor.

Mrs. Janie Lovern, a 12-year employee of EES, was guest of honor last week at a retirement party hosted in her behalf by the ASL staff.

Janie joined the station in 1964 as secretary for R. A. Young in the Crystal Physics Branch. She then worked with Dr. R. K. Hart in the newly formed Solid State Sciences Division and continued in this group as secretary to the present Division

Chief, Walter Cox.

Preparations for the afternoon party were coordinated by Betty Jaffe, head secretary of the ASL. As a farewell remembrance, Mrs. Lovern was presented with a crystal figurine.

Plans for her future include keeping occupied with hobbies of art and painting in between traveling with her husband and remodeling their home.

Applied Engineering Laboratory

Allen Ecker was session chairman for the I.E.E.E. meeting held in Boston, on May 13. The subject was Radar Electronic Counter-Countermeasures.

Allen Ecker's secretary, Judy Bodnar, has transferred to the Co-op Office on campus. Judy has been replaced by Maggi Rampling, who had been working in the Baker Building as receptionist/secretary to Tom Jones.

Charles E. Ryan, Fred Cain, and James Fuller, EE Div., attended a Ship Antenna Performance Prediction Program Review meeting in Daytona Beach.

Johnson Wang attended the Electrically Small Antenna Workshop held at Fort Monmouth, NJ. Dr. Wang presented a paper at this workshop.

Jim Toler gave a lecture entitled "Medical Applications of Electro-

magnetics" at the joint meeting of the I.E.E.E. Groups on Electromagnetic Compatibility and Engineering in Medicine and Biology in Boston.

Bill McCroskey (ATTA) also attended Electro '76, the I.E.E.E. sponsored international convention and exposition on today's electronic technology in Boston. During the convention, 35 technical sessions in various areas of electronic technology were held with a major emphasis on microprocessors. Bill has obtained preprints of various sessions and they are available for copying.

The EES Ham Radio Club meeting has been rescheduled from June 3 to June 23. All those wishing to attend should meet at 7:30 in the 3rd floor auditorium of the Baker Building. For information contact Alan Bridges X3470.



Mary Hewett (l), Barbara Allen (center) and Martha Miller (r), handle all functions of the Supply Services division.

Supply Services is Gold Mine of EES

In just over four months the EES Supply Services has placed over 1125 orders ranging from electronic equipment to nuts and bolts, office supplies and scanner microscopes.

Barbara Allen, head of Supply Services since 1971 recalled, "Over the past few years we've had some unusual requests including orders for balloons, cigarettes and even one Jiffy Johnie."

The number of orders handled each month by Ms. Allen's division has doubled since January of this year. In April, 380 requisitions and field purchases were filled, totaling some \$206,172. This was a substantial boost compared to last April's figures of 267 orders amounting to \$108,469.

The procedure for ordering supplies and equipment requires filling out a request form which is then processed through Ms. Allen's department and forwarded to the Georgia Tech procurement office where a minimum of six bids must be solicited.

State regulations require this procedure. Also, any orders for purchases over \$100 must first be approved by one of the state agency representatives.

The only difficulty with this system, confides Ms. Allen, is the length of time involved in placing an order and receiving the product. When a project director receives a working contract, his time is limited

so equipment needs must be ordered immediately. "That's why 90% of our orders are 'emergencies'", Ms. Allen said.

"We send an emergency request form to the procurement office and just hope they'll find the best of six bids and place the order the very same day," Allen continued, "In most cases, they can."

With the overload of emergency orders as well as the number of regular requests, Ms. Allen's two assistants, **Martha Miller** and **Mary Hewett** are kept quite busy. Ms. Miller is responsible for all billing and payments and coordinates the office when Ms. Allen is unavailable. Ms. Hewett handles all correspondence for the group and cares for damaged equipment.

Also under Ms. Allen's Supply Services wing are the warehouse and mail-room operations.

The warehouse, headed by supervisor **Billy Boner**, maintains stock supplies and handles deliveries of all office supplies and laboratory equipment for personnel in the Baker, Hinman, Electronic Research and Photo Lab buildings. The staff includes three full time employees and one student assistant; **Gary Easterwood**, **Teddy Reed**, **Marvin Mitchell** and **Jim Austin**.

Mitchell is responsible for stock inventory supply and control; Reed handles mail pick up and delivery while Easterwood and Austin maintain delivery services for the EES offices.

Stock supplies for EES are ordered from the central receiving of Georgia Tech. Orders for the area EES offices are also handled by Supply Services.

In addition to the usual stock supplies in the warehouse, Boner says he has quite a collection of odds and ends including 5 drinking fountains, 2 airplane engines, an air conditioner, a piled stack of office furniture, typewriters and adding machines. "You can find just about anything here if you look hard enough," Billy added.

The total scope of Supply Services duties and responsibilities are wide-ranged, reaching every person employed by the EES whether ordering supplies, sending mail, requisitioning equipment or locating a spare drinking fountain. Whatever is needed, Ms. Allen and her staff will be able to get it... without much waiting(?).



The mail room and warehouse are manned by Gary Easterwood (l), Marvin Mitchell (c front), Billy Boner (c) and Teddy Reed.