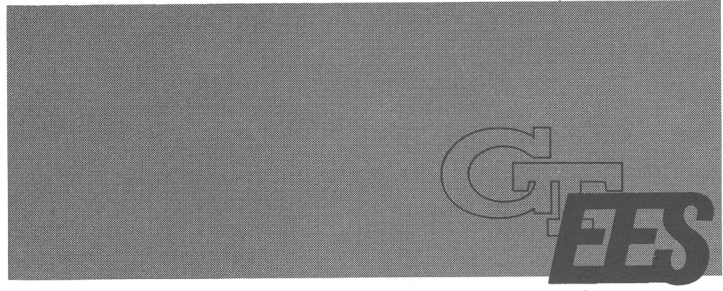


# STATION NEWS



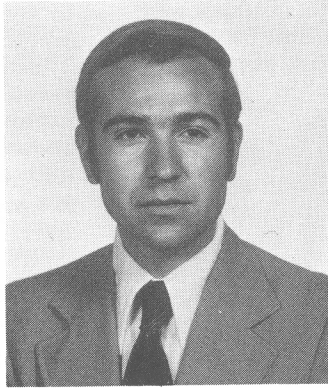
ENGINEERING EXPERIMENT STATION • GEORGIA TECH

VOLUME 6 NUMBER 5

JUNE, 1977



W. C. Ward



J. L. Birchfield



B. E. James



D. J. O'Neil

## EES Continues to Reorganize

The Director of EES, Dr. Donald J. Grace, recently announced the reorganization of two laboratories: the Productivity and Technology Applications Laboratory (PTAL) under R. L. Yobs has been designated the Technology & Development Laboratory (T&DL) and will include four divisions. These are the Industrial Development Division under W. C. Ward, and the Industrial Extension Division, under B. E. James. Also in the new Technology and Development Laboratory are a Chemical & Material Sciences Division, under D. J. O'Neil, and the Productivity Systems Division whose chief is J. L. Birchfield.

A new Office of International Programs is headed by Ross Hammond, who has been director of the Economic Development Lab which is now disbanded. This office will have increased and expanded functions in the growing fields of international research and development being experienced by EES and Ga. Tech.

The changes are the result of a continuing effort to realign Station

personnel to strengthen the focus of research program areas and to improve technical coordination and interaction.

(Note — as a consequence of changes of organization, phones of offices in the C&S Bank Building will have new numbers in the near future. Also, to avoid confusion in the Campus Mail system use the initials IPO for the new office—someone else has OIP.)

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## Retirees Honored at Banquet

The annual Retirement and Awards Dinner was held on Tuesday, May 31, in the Student Center Ballroom. The EES retirees who were honored were Frances Bailey and Murphy Pace.

Gold-T 25-year service awards went to Tom Buckley, Marion Calhoun, Warren Foster, Walt Hicklin, Jo Walsh and J.D. Walton of EES. The EES staff joins in congratulations to these loyal and deserving colleagues.

## Wood Energy Seminar Held June 6-7 In Atlanta

Availability and use of various sources of energy is a chief concern of industry, businesses and individuals today. An important Wood Energy Seminar, featuring experts in all areas affected by wood energy, was held June 6-7 at the Sheraton-Biltmore Hotel in Atlanta. Georgia Tech and the Georgia Forestry Commission co-sponsored the event.

Lieutenant Governor Zell Miller; Ray Bragg, Executive Secretary to U.S. Senator Herman Talmadge; Omi Walden, Director of Georgia Office of Energy Resources; Ray Shirley, Director of the Georgia Forestry Commission; and Dr. Donald J. Grace, Director of EES were among the many panelists and guest speakers.

According to Grant Curtis, of T&D Lab who helped organize the seminar, it included seven panel discussions, covering all areas of economic and environmental impacts of wood as energy as well as latest technology in the field.

# Station to Station

In this and the next issue of Station News, I will dedicate my column to sharing highlights of the remaining final reports from our seven internal policy planning committees.

As I read through these reports, I was again appreciative of the effort required to produce them, but even more significant to me was the attitude of constructive evaluation and positive recommendation which committee members focused at the Station level, rather than at a more parochial laboratory or division level. I'm certain that we're maturing at a faster rate than our problems are growing.

The three reports summarize the range from a very general, long-range topic (Technology Planning) to an ever-present and vital need (Contract Development) to a quite specific area of Station activity (Productivity).

## Technology Planning

Committee members consisted of: **Jerry Heckman** (STL), **Dick Johnson** (OOD), **Tom Miller** (SED), **Ed Reedy** (RAIL), **J. D. Walton** (ASL) and **Dan O'Neil** (TDL) as chairman.

Defined broadly, technology planning (TP) is that which emphasizes technological change and problems as opposed to financial, environmental, social, etc., problems. Along with other considerations, it can contribute significantly to generating EES goals and the development of paths to meet those goals. While technology *forecasting* and technology *assessment* are necessary inputs to technology *planning*, they alone do not provide the focus necessary for EES to proceed with decision-making and action.

One conclusion of this committee is: "...coordinated technology planning would allow EES to forecast potential market areas and to make a decision as to whether these market areas will be pursued by laboratories within EES. This would put some restraints and direction on the growth of EES and allow us to control our own destiny!"

Some other major conclusions are:

1) We need hard, factual, objective technical data for *long-range*, overall EES planning and efficient utilization of E-funds;

2) The formal TP function should *augment* and not in any way reduce the effectiveness of on-going informal TP at the line level;

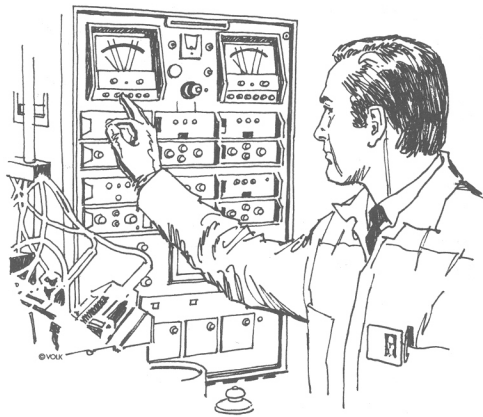
3) TP is costly and, for a limited-resource organization such as EES, must, therefore, be applied to selected technical areas;

4) Considerable overlap will occur between TP and contract development (CD), and TP working groups would interact nicely with possible CD "cluster groups";

5) Approach must be flexible, adaptive and should be modified and refined periodically as EES goals and objectives change.

## Contract Development

This committee consisted of **Jerry Birchfield** (TDL), **Archie Corriher** (OOD) **Ross Hammond** (IPO), **Richard Moss** (ETL) and Chairman **Walter Cox** (ASL). Primary areas of emphasis were organization, performance measures, centralized services and management,



and State programs. Strongly recommended was *development of an environment conducive to internal cooperation rather than competition*.

A major suggestion was the formation of Technology Clusters to group persons with similar technical interests and thereby to provide a means of communication, cooperation and joint contract development, minimizing potential overlap and competition. These clusters would operate in a "staff" rather than a "line" mode, with representation from various organizational units, reporting to the Station Director's Office.

Additional recommendations, each having detailed discussion in the report, included: complete the process of defining primary marketing areas of each operating unit; study the desirability of centralizing report and proposal preparation; establish a central source for sponsor/travel information; distribute a bibliography of Station reports, proposals, papers published and delivered, and new projects; consider establishing a centralized Contract Development Program Office to coordinate and manage all external contract development activities; implement procedures to "reward" indi-

viduals or units that cooperate with others; re-examine the present formula allocation of E/H funds; expand efforts to communicate EES programs to responsible State leaders.

## Productivity

Chaired by **Rudy Yobs** (TDL), the committee included **Lee Burks** (TDL), **Jerry Lewis** (IPO) and myself from OOD. Our discussions were prompted by an External Advisory Committee recommendation that as the State's official Productivity Center, the Station provide greater "people" orientation both in service activities (education, government, health care, etc.) and in industry.

The committee concluded that EES should give additional program emphasis to constructive improvement of labor productivity and quality of working life. The direction the program should take includes both: (1) the building of an improved data base and research program and (2) expansion of application-oriented work, e.g., demonstration projects, educational (vo-tech) analysis, continuing education programs (satellite technology) and direct field assistance (area offices).

Creation of the new Technology and Development Laboratory, which was completed subsequent to this committee's report, has strengthened the base of mutually interested staff for program development in the human productivity area and should enhance our ability to respond to the External Advisors' recommendation.

*Donald J. Bruce*

## An Equal Education and Employment Opportunity Institution

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**Spurlock Participates in NASA Ames-Stanford Univ. Summer Study**

Jack Spurlock, ASL Associate Director, has been invited to participate as the group leader for closed-ecology life support systems at the Summer Study on "Space Colonization" sponsored by NASA Headquarters, the NASA Ames Research Center and the Stanford University. The Study Institute runs from June 22 through August 2, 1977, in Palo Alto, California.

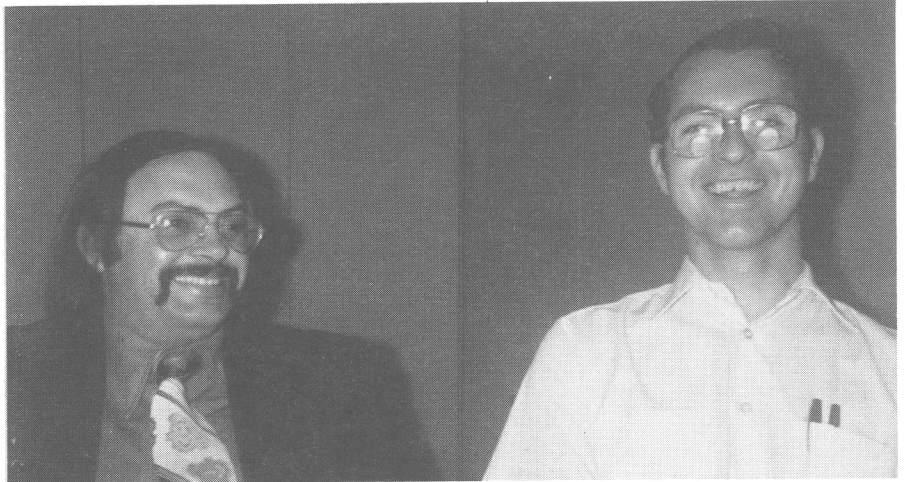
For twelve years, Jack has been Principal Consultant on Life Support Systems for Manned Spacecraft and also a member of the Life Science Advisory Council which reviews NASA plans and programs for life-science and life-support systems. He is the only such consultant in the Southeast.

NASA is looking beyond the Space Shuttle's early operation years (the 1980's) to anticipate needed life-support systems technology for applications such as industrial activity involving space-based work colonies. For these types of long-term space "settlements," it will probably be necessary to provide earth-independent closed ecological systems for combined food production, atmosphere revitalization, water reprocessing, and the conversion of wastes to useful products.

Jack's group will consider two major questions: What are the likely technical requirements for the development of these types of closed-ecology life support systems? What research and resource commitments will be necessary, over a period of years (perhaps 20-40), in order to accomplish the required development? The group will be comprised of experts from over ten institutions, representing that many different technical disciplines that are relevant to this area of technology.

Converting wastes into useful products by biological and chemical processes will be part of the group's concerns.

\*\*\*\*\*



Atlanta Journal Science Editor Charles Seabrook and Gary Kelly enjoy interview.

**A Winner**

Gary Kelly is an unusual addition to EES. It's not just because he is an inventor-designer and a researcher or that he has a beautiful dog and a very attractive wife or that he's courting NSF and other funding sources to sell his ideas. Gary, age 26, is indeed bright . . . and blind. Yet he is unabashed by his visual "inconvenience." He does have 5% tunnel vision in one eye.

Gary was already working with T&DL through a special grant from CETA (Comprehensive Education and Training Act) when HEW made it clear that the handicapped must be accommodated in employment and that those regulations would be rigidly enforced. Tech is not new to him as he was the first blind person in over 30 years to be graduated from GT when he received a B.S. in Psychology. In his third year as a physics major, Gary had to change fields because of severe eye problems. His forte is designing.

"I can design anything if someone will build it," declares the high-spirited researcher. Some of his achievements include: a device for blind diabetics to test their urine (a urinimeter); a device to aid the blind in arriving at the right floor on an elevator; and an energy storage system. At his Sandy Springs home, he and a friend developed a regenerative braking system for series motors in a "golf cart auto." It can run 30 mph in a comfortable and nonpolluting fashion. With the aid of an M.E. design class at Tech, Gary has designed a computer display for the blind which would allow them to work in banks, credit bureaus and other places using computers.

When asked how his confidence and acumen emerged, Gary explains that his parents were loving and not overly protective. "I was 12 when my father took me to a post office, gave me a letter and told

me to mail it. Somehow I did it. I seem to have a built-in memory device that enables me to find my way out of places exactly as I went in. Also, my mother encouraged my love for reading by stopping at 'cliff-hanger' spots in stories she was forever reading to me. She left me with one option: if I wanted to know what happened, I had to read it myself." Gary reads 200 wpm and retains 90-95%. "Handicapped people would say that I had all the breaks," he says.

Whether helping an Atlanta Journal photographer with a hearing aid/pay phone problem or advancing his designing ability to worthwhile endeavors in energy, Gary Kelly exemplifies what determination and patience can do for both an individual and an institution.

**IDD**

Hardy Taylor and Bob Collier attended the National Association of Development Organizations — EDA Training Program held in Savannah, May 16-18 and Bob made a presentation on energy planning and development.

Ed Bethea attended the Fifth Annual Conference/Retreat of the Georgia Association of Black Elected Officials, Inc., which was held in Savannah, May 7-8. He also attended the National Association of Black Manufacturers' Convention which was held May 17-22 at Tuskegee Institute, Tuskegee, Alabama.

Kathy Funderburk, secretary to Hardy Taylor and IDD, has transferred to the position of Division Secretary for Jerry Birchfield of the Productivity Systems Division.

## RAIL

Meteorologist **Jim Metcalf**, of the Radar Technology Branch, was interviewed recently for an article which appeared in the Book Section of the *Atlanta Constitution* concerning adverse weather conditions affecting aircraft flight. The article was prompted by the recent air crashes at New Hope, Ga., and in the Canary Islands which involved bad weather conditions.

RAIL welcomes **Bruce Cherry** who has started work in Radar Technology. Bruce, a native of New York City, received his BS degree from Georgia Tech. His hobbies include sailing and woodworking. And **Bob Hayes** got married again last month. Bob notes, "as an Institution, marriage is even better than Georgia Tech!"

**Nick Currie** became engaged last month to **Darenda Rakestraw**, who used to work as a secretary in **Fred Dyer's** shop.

**Nick Currie, Jim Scheer, Tom Devine** and **Ralph Hoover** visited Eglin AFB on 16 May for discussions of the Adverse Weather Test Range and next year's millimeter snow measurements program.

**Bob Trebits, Bill Licota** and **Bobby Appling** spent May 23 through May 27 at Burlington, Vermont, assisting General Electric formulate requirements for the DIVAD (Division Air Defense) radar which will provide guidance for a tank-mounted 30mm Gatling gun.

**Clark Butterworth** participated in the great U.S. government surplus giveaway at Cape Kennedy, Florida, on May 25 and 26. He managed to bring back lots of loot to further research at EES with a minimum number of scrapes and bruises from the other participants.

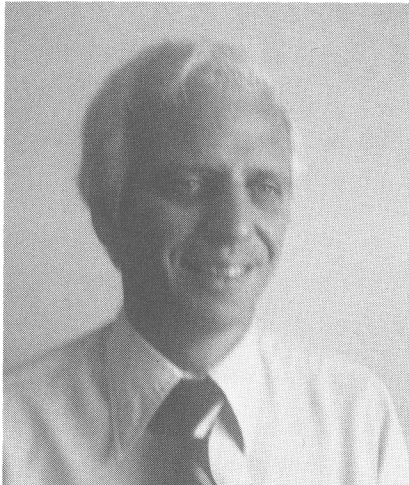
**Steve Zehner** underwent corrective surgery on May 31 and is doing well.

## ETL News

**Ron Wallace**, Commun. Tech. Grp., was in Washington, D.C., on May 19 to review progress on his project, dealing with the use of CB radios for emergency highway assistance.

**C.S. Wilson**, CTG, visited Cape Kennedy, Florida, 23-24 May to inspect surplus equipment for possi-

## Dick Hodges Leaves EES



Dick Hodges

## Systems and Techniques Lab Changes

As of 1 July STL will have four division organizations: the Electromagnetic Effectiveness Division, whose Chief is Fred Cain; the Systems Development Division, under Acting Chief R. A. Moore; and a new XM Program Office with Program Manager Sam Alford.

Lee Edwards has been appointed Chief of a new Antennas & Countermeasures Division which includes Dick Hodges' old Countermeasures Division as a consequence of Dick's departure from EES in June.

**Dick Hodges has recently accepted a position with Scientific Atlanta where he will be Director of Operations in the Electro Products Division to develop business in radar, telemetry and electronic warfare. All of Dick's friends at EES join in wishing him good fortune in his new endeavors.**

ble transfer and use at EES.

CTG has received a follow-on contract from NASA for additional severe weather research. Under this contract EES personnel will participate in "TRIP-77" (Thunderstorm Research International Project) to be conducted in July at the Kennedy Space Center, Florida.

**Alice Miller** has joined ETL as secretary to **Richard W. Moss**, CTG.

## Antenna Committee Visits Tech

Tech has the recent distinction of being the only American University to be visited by the Sub-Group K Antenna Committee of an international technical cooperation group.

The committee, made up of allied representatives from the U.K., Canada, Australia and the U.S., was at GT on 18 May in its tour and assessment of the state of the art in radar antennae. Committee members are mainly visiting industrial firms.

## Staff Moves

**Archie Corriher** has been designated as Assistant to the Director of EES. He has been functioning in this capacity for some time. He will be moving to new offices in the Hinman Building.

Also moving to Hinman, **Charlie Smith** will report to the OOD and will remain "Administrative Specialist."

## Walk to lunch and save gasoline

## Systems & Techniques Lab

**Ty Craven** and **Larry Sikes** of Systems & Antenna Applications Division were in Houston, Tex, the last week of April performing RF measurements on well logging tools for Schlumberger Well Services.

**Jim Cofer** attended the 1977 Antenna Applications Symposium at the University of Illinois in Urbana, April 27-29.

A project, entitled "Compact Range Study," has just been started with Kirtland Air Force Base, N.M. **Dr. R.C. Johnson** is Project Director of the \$34,000 contract.

## Supply Services

As of May 14, **Gary Easterwood** in supply services is the father of a boy, Gabriel Todd.

## ASL News

**Dr. John E. Goodrum**, ASL, taught a course in engineering thermodynamics at Southern Tech during spring quarter. This activity is intended as an initial step toward a cooperative relationship between EES and the Mechanical Engineering Technology Department of Southern Tech; EES professional staff would (on an irregular basis) teach undergraduate engineering courses. It is felt that the industrial experiences of EES personnel could be an asset in presenting engineering subjects to students. At the same time, members of the EES staff would have an opportunity for a rewarding teaching experience.

A workshop on Failure Mechanisms of Electronic Devices in Storage sponsored by the Georgia Tech and the U.S. Army Missile Research and Development Command (MIRADCOM) was held on May 24-25. This workshop, which was part of a two year program with MIRADCOM, under the direction of **Billy Livesay** and **Ed Scheibner** of ASL, brought to the campus over 30 experts from industry, government and university.

**Tom Elfe** conducted a one week training session on microwave tubes for the Air Force Logistics Command at McClellan AFB, Sacramento, California. He also attended the Microwave Power Tube Conference in Monterey, California.

**Walter Cox**, **Earl Meeks** and **Dale Covington** recently visited the Naval Research Laboratory in Washington for program reviews.

**Larry Callahan**, student assistant with ASL for 2½ years, will receive his B.S. in Industrial Management in June. Following his June marriage to Catherine Bandoly of Georgia State, Larry will be attending Indiana University on scholarship to work on his Masters Degree in Business Administration.

**Stephen Day** is going to Washington! Steve of EEAD has recently been awarded an internship in Senator Sam Nunn's Washington, D.C., office for three months next spring. This Senate Intern Program competitive award was received by four students from the Georgia university system for the spring term and twelve

students for the whole year. **Doris Willmer (TDL)** was one of last year's award winners.

This summer **Jeff Tiller**, EEAD, will embark on a 2-month jaunt through Eastern Europe and the Soviet Union as he leads the annual Georgia Tech YMCA summer tour of Russia. **Jay Walton**, son of SEMTD's **J.D. Walton, Jr.**, is one member of the traveling crew. The group will spend about two weeks in

both Poland and the USSR, and one week in East Germany, Czechoslovakia and Hungary.

The members of the tour, despite continual warnings from previous travelers about poor food, uncomfortable lodgings, slow trains and unfriendly people, are quite excited about an enjoyable as well as educational experience. The annual tours are organized by **Carlton Parker**, at GT YMCA.

## ASL in Co-Siting Research

Since industry has a major impact on the nation's energy and environment, identifying unique, creative ways for industry to participate in solving problems in these areas is noteworthy. The EES has recently been awarded \$199,700 by the NSF-RANN (National Science Foundation — Research Applied to National Needs) to extend and broaden research to date in synergistic co-siting of industrial activities.

Synergistic co-siting involves two or more industrial plants' cooperating and interacting on the same location. Carefully planned groupings of industrial and/or agricultural activities in complexes will provide

mutually beneficial use of energy, raw materials, land, co-products, plant wastes, and transportation facilities. According to Co-principal Investigator **Dr. Jack M. Spurlock**, a good possibility of such co-siting would be a synthetic chemicals company and a plant that produces fabrics or carpets. Products or waste from one plant would be utilized by the other, for example.

The ASL research team, which includes **Dr. H. C. Ward**, **Ms. Anita Fey**, **Dr. Jude Sommerfeld** and **Dalip Sondhi**, intends to make vigorous use of the results including conferences and workshops. National (and perhaps international) co-siting of industrial activities is a promising approach for the solution of major problems in energy and environment.

In deep synergistic communication are co-siting research team members (left to right) **Jude Sommerfeld**, **Dalip Sondhi**, **Jack Spurlock**, **Anita Fey** and **Henderson Ward**.



# Effective Slides

Good slides amplify and clarify the message, stimulate interest and help the speaker keep "on the track." They merit the same care in preparation as the commentary. Slides that cannot be read when projected lessen the impact and effectiveness of the presentation; in other words, the primary consideration is *legibility*.

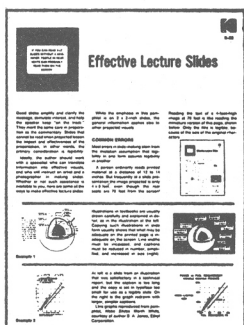
Ideally, the author should work with a specialist who can translate information into effective visuals, and who will instruct an artist and a photographer in making slides. Whether or not such assistance is available to you, here are some of the ways to make effective lecture slides.

## COMMON ERRORS

Most errors in slide-making stem from the mistaken assumption that legibility in one form assures legibility in another.

A person ordinarily reads printed material at a distance of 12 to 14 inches. But frequently at a slide presentation the image projected is only 4 x 6 feet even though the rear seats are 70 feet from the screen!

Reading the text of a 4-foot-high image at 70 feet is like reading the miniature version of the page, shown below. Only the title is legible because of the size of the original characters.



## OBSERVE THESE IMPORTANT POINTS

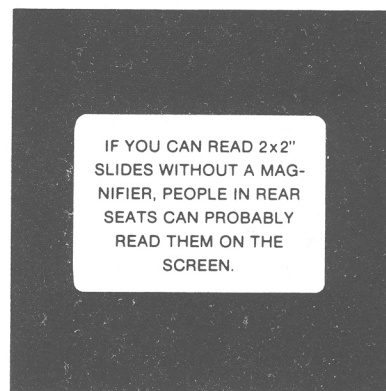
- Use 2 x 2-inch color slides—they are effective, easy to make, and inexpensive. Color film is also convenient for making slides from black-and-white copy.

- Use a dark-colored background—it is better than black or white.
- Limit each slide to one main idea.
- Use a slide series for progressive disclosure—it clarifies greatly.
- Limit each slide to 15 to 20 words, or 25 to 30 elements; include no more than you will discuss.
- Leave space—at least the height of a capital letter—between lines.
- Include titles to supplement, not duplicate, slide data.
- Use several simple slides rather than one complicated one, especially if you must discuss a subject at length.
- Use duplicates if you need to refer to the same slide at several different times in your talk. It is impractical for the projectionist to search for and reshew a slide.
- Plan your slides for a good visual pace in your presentation. Don't leave a slide on the screen after discussing its subject.
- Thumb-spot all slides in the lower left corner when the slide reads correctly on hand viewing. Add sequence numbers.

## PREPARE FOR A SMOOTH PRESENTATION

- Rehearse your slide presentation several times so that you will be familiar with the sequence and timing of the slides.
- Several days in advance, let the program chairman know the size and mounting (glass, metal, Kodak Ready-Mount, etc) of your slides, and the kind of tray you will use so that he will be sure to provide the right projector. Be sure you use a widely accepted mount.
- On your trip, carry your slides with you—in the tray, if possible. Don't trust them to your baggage if it is checked through.
- Check with the projectionist early concerning the required projector. If necessary, plan for the time it will take to load a projector tray.
- Request a projector with remote control that you can operate from the lectern. Otherwise, have a signal light for the projectionist or arrange some other means, for instance, a copy of the commentary marked to show the slide changes.

- Give your slides to the projectionist before the meeting, when you'll have time to discuss any special instructions with him. If you wait until just before your talk, he may then be busy with the previous speaker's slides.
- Use the slides to supplement and support your oral presentation, not simply to repeat what you are saying.
- Request a pointer, if needed, and know how to use it.
- Consider your audience size in terms of screen size and projector output. As an example, an audience of 400 needs a screen image 8 feet high.



## AID Grant Advisory Committee Meets

Ross Hammond and the staff of the Office of International Programs met on 2-3 June at the C&S building with the AID Grant, 211(d), External Advisory Committee for presentations, discussions and review of the work being done at GT on the AID Grant.

The Committee, made up of prominent representatives from the Agency for International Development, Tech, the World Bank, the East West Center, Cornell University and the National Academy of Engineers, will make recommendations to AID on the Grant projects.

Ross Hammond recently received a citation for the Fellow Award of the American Institute of Industrial Engineers at their annual meeting in Dallas, Texas, May 23.