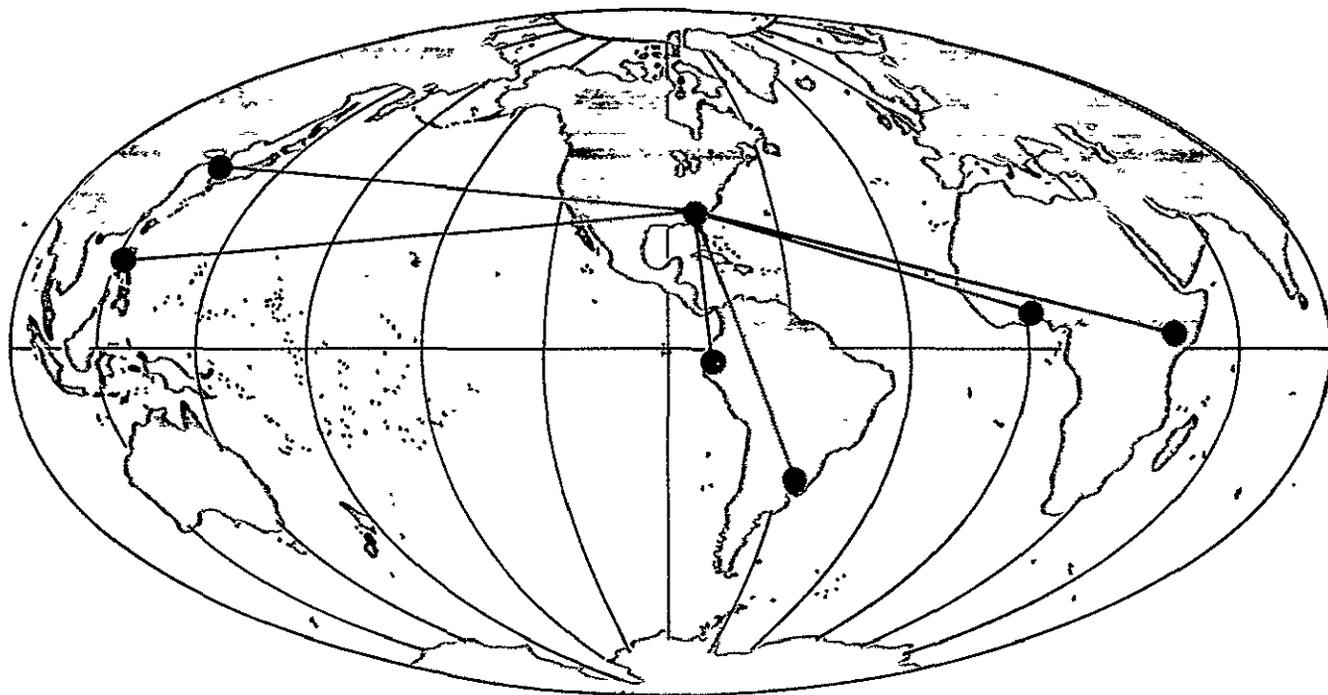


EMPLOYMENT GENERATION THROUGH STIMULATION OF SMALL INDUSTRIES



THIRD ANNUAL REPORT

211 (d) GRANT YEAR—FEBRUARY 23, 1975—FEBRUARY 22, 1976

Third Annual Report

EMPLOYMENT GENERATION THROUGH
STIMULATION OF SMALL-SCALE INDUSTRY

211(d) Grant Year: February 23, 1975 - February 22, 1976

Prepared for
Agency for International Development

Georgia Institute of Technology
Atlanta, Georgia 30332

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211(d) Annual Report
Date due: April 22, 1976
Date submitted: April 22, 1976

Grant Title: Employment Generation through Stimulation of Small-Scale Industry (Institutional Grant AID/CM/ta/G-73-18)

Grantee: Georgia Institute of Technology

Grant Program Director: Ross W. Hammond, Economic Development Laboratory, EES

AID Sponsoring
Technical Office: Technical Assistance/Office of Science and Technology

STATISTICAL SUMMARY

Period of Grant	February 23, 1973 to February 22, 1978
Amount of Grant	\$800,000
Expenditures for Report Year:	\$189,714
Accumulated:	\$501,914
Anticipated for Next Year:	\$170,000

NARRATIVE SUMMARY: GEORGIA TECH 211(d) Program

EMPLOYMENT GENERATION THROUGH STIMULATION OF SMALL-SCALE INDUSTRY

The primary objective of this three-year-old program is to strengthen Georgia Tech's demonstrated capability in employment generation through the expansion of the small industry sector. This capability is particularly relevant to massive unemployment and rural-to-urban migration problems in many developing countries. The program is integral to the institutional commitment to international education and development.

Activities during Grant Year One included organizational staffing and start-up of the program, the initiation of a small industry data center, the establishment of counterpart relationships with six organizations in developing countries, ten field trips to developing countries, the development of applied research studies relating to small industries, the design of a master's curriculum focused on industrialization, a series of international development seminars, and the maintenance of communications with many international development and linkage organizations. Five published reports and three published papers, as well as two informational brochures, were produced.

During Grant Year Two, the preceding activities were fully implemented and expanded and new activities were generated. The counterpart relationships became more operational and considerable interaction developed. Separately funded but related projects with two counterparts (Soong Jun University in Korea and the Fundacao Educacional do Sul de Santa Catarina in Brazil) were initiated. Twenty-four field trips were made by 211(d)-associated personnel.

Program activities reached a peak in Grant Year Three. Applied research activities included the production of 14 published reports, guidelines, monographs, bibliographies and directories, and a number of audiovisual program documentations. The International Development Data Center increased its holdings by 50% and the staff responded to 2,400 information and assistance requests.

Education and training activities included expansion of the master's program in industrialization to involve 10 students, with nine more to be admitted in future quarters. A new graduate course has been prepared and a thesis option added to the program. A training program was tested in the Philippines and a training manual subsequently developed.

The program conference and seminar activity continued unabated. Six international development seminars were held in Atlanta, and 15 conferences, workshops, and seminars were attended by 211(d) staff members. A separately funded international development conference and an AID symposium were hosted in Atlanta.

The existing counterpart network added an eighth counterpart (The University of Science and Technology, Kumasi, Ghana). Twenty-five individual field trips were made by 16 211(d) staff members to counterpart and other locations. Staff personnel from six counterparts visited or interned in Atlanta.

One external and one internal advisory committee meeting and four staff coordination meetings were held.

DETAILED REPORT

I. GENERAL BACKGROUND

One of the massive problems faced by many developing countries is high unemployment and underemployment. In addition, most of these nations have large numbers of young people in their population makeup. These young people are now, or shortly will be, joining the labor force, compounding the existing unemployment and creating more severe pressures for job generation.

An associated and difficult matter in many of these countries is the continuing rural-to-urban migration, generated in part by the quest for employment opportunities.

One of the approaches which can be used to ameliorate these and other developing country difficulties is the generation of industrial activities in the rural areas. Such industries could create employment opportunities and new income in the rural areas and, conceivably, reduce the population migration to the urban centers.

There are, of course, difficulties and inhibiting factors connected with rural industrialization. Rural industries tend to be small in size, unsophisticated in technology, limited in markets, hamstrung by inadequate capitalization and lack of access to technology, and unresponsive to factor changes. The owners tend to be self-made entrepreneurs with little education or managerial training. The rural areas frequently lack the infrastructure which industry needs.

The small industry segment in many developing countries tends to be owned by nationals, whereas the medium-size and large industries tend to be foreign owned. Hence, there is merit from the viewpoint of the home government in insuring that a viable small industry sector exists. Many governments have recognized this and developed programs to encourage this type of industry.

Moreover, small-scale industries tend to be numerous, diversified as to product, and marginal in profit-making capability. They are too small to support staff specialists who could solve many of their relatively simple problems of management, manpower, training, purchasing, production, and sales. Indeed, specialists in these fields are in short supply in most developing countries,

and generally would not be available even if the rural industries could support them.

II. PURPOSE OF THE GRANT

It is with this difficult small industry area that Georgia Tech presently is concerned in its international development activities. The Georgia Tech 211(d) grant focuses on the mechanisms to generate employment through the expansion and diversification of existing industry and the creation of new industrial enterprises, particularly, but not exclusively, in the rural areas of developing countries.

While this program is only one aspect of Georgia Tech's continuing interest and commitment to international education and development, it is an important aspect. Tech has a long history of applied management and technical assistance to domestic and overseas industry. One unit, the Economic Development Laboratory (formerly Industrial Development Division) of the Engineering Experiment Station, has provided such assistance to approximately 4,000 industrial enterprises over a 20-year period. Other units have had experiences of various sorts with industry of all sizes.

Hence, the 211(d) grant provides the institution with an opportunity to build its capability to assist small industry from a departure point of considerable experience in the field.

III. OBJECTIVES OF THE GRANT

A. Objectives Restated. The general objective of this program is to strengthen the capabilities of the Georgia Institute of Technology to more effectively apply its present interests, skills, and experience in developing small-scale industries in Georgia and Latin America to the problems of small industry in the less developed countries.

The program will consolidate presently available methodologies for achieving small-scale industrialization and job creation in the LDCs. It will systematically further the development of these methodologies by research, evaluation, generalization, and codification so that generally applicable and transferable principles and procedures will be readily available for effective application in the less developed countries. Innovation in developing new technological approaches to industrialization and employment generation is another objective.

In particular, emphasis will be placed on the following program elements:

- (1) Establishment and maintenance of linkages with six counterpart institutions in developing countries is an essential component. These linkages will provide a real-world laboratory in which to gather jointly essential data and test alternative approaches to the accelerated development of small-scale industry.
- (2) Case studies of LDC small industry problems will be compiled, analyzed, and codified. This data base will be obtained through literature searches and development organization contacts and will be compiled in the field by the program staff when appropriate.
- (3) Analysis of methods and techniques for solving small-scale industry problems and encouraging expansion and diversification will be made to determine the reasons for success or failure under varying environmental conditions.
- (4) New approaches and alternative methodologies will be evolved and tested in the field to determine their suitability for the accelerated development of small-scale industries and elimination of problems.
- (5) Preparation will be undertaken of a graduate degree program, new courses, seminars, and other training programs for students and faculty who have an interest in small-scale industry development. The preparation and testing of these programs will serve to enlarge the capability of the institution's staff in understanding the small-scale industry problems and employment generation processes, and to broaden the base of knowledge in the institution.

The objectives will be achieved through a program of sustained activities in applied research, relevant education and training, appropriate seminars and conferences, and program linkages with other institutions. The knowledge base derived from these activities will provide the institution's staff with valuable inputs and insights, as well as being of interest to development practitioners and organizations. To the extent feasible, the above activities will be implemented in collaboration with these institutions.

B. Review of Objectives. As the program developed in the first and second years of the grant, it became increasingly apparent that the most

important single element is likely to be the relationship between Georgia Tech and the counterpart institutions. This network of organizations with a common interest in stimulating the developing of small-scale industries serves as information-gathering and dissemination loci, as well as a real-world laboratory for testing alternative approaches to industrialization. Moreover, some of the counterpart activities are likely to provide material for new case histories on industrialization which can be written up during the life of the 211(d) grant, thus making a significant contribution to the development literature.

As a consequence of these developing counterpart relationships, a greater emphasis is being placed on this element of the program than originally contemplated. This will be reflected in larger allocations of resources to on-site work in the counterpart countries in subsequent grant years. Otherwise, the emphasis on other program elements remains unchanged.

C. Review of Critical Assumptions. Basic assumptions related to this small industry project are as follows:

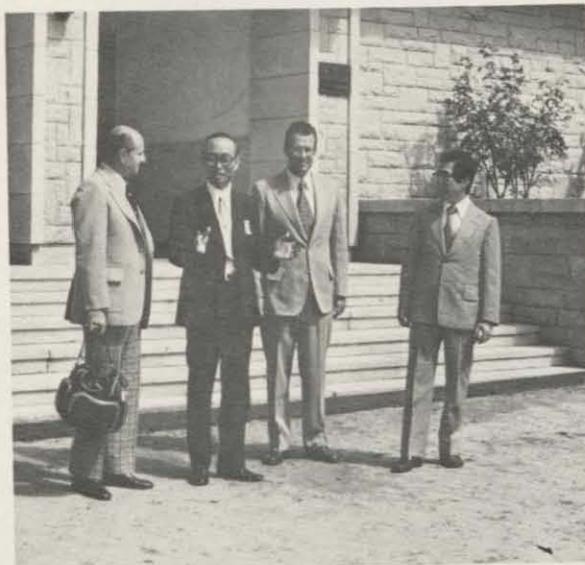
- o The labor/technology equation will remain of priority concern.
- o U.S. engineering, industrial analysis, entrepreneurial, extension, and economic skills can be more effectively harnessed.
- o There will be opportunities for U.S. inputs -- either bilaterally or through multilateral organizations -- that can significantly influence LDC actions.

It is believed that these assumptions were valid initially, still hold true, and that many of the activities generated by the 211(d) and the associated international activities at Georgia Tech, and by counterpart institutions, demonstrate the basic correctness of these assumptions.

IV. ACCOMPLISHMENTS

The third grant year of the Georgia Tech 211(d) program involved a number of faculty members and students in addition to those who had participated in prior years. The broad program of applied research, education and training, counterpart linkages, and conferences and seminars continued in a dynamic fashion. The annual targets and resulting outputs are detailed on the following pages. As in prior years, almost all of the year's goals were attained or exceeded.

KOREA



Dr. Hahn Been Lee, President of Soong Jun University, takes Ross Hammond and Dr. Thomas Stelson, both of Georgia Tech, on a tour of the Seoul, Korea, campus, assisted by Prof. Yoon Bae Ouh.



Soong Jun University professors assisted Mi-Kwang Handbag Manufacturing Company in solving a problem in obtaining an adequate thickness on its nickel and copper plating.

The specific targets established by Georgia Tech for the third grant year are described in the second-year annual report. For convenient reference, they are repeated in the detail of each objective/output below. A quick reference profile of third-year goals and results is provided in Table 1 on the next pages.

A. Applied Research and Knowledge Base (40% of effort -- \$72,000)

1. Description. The third grant year applied research activity included the production and publication of 11 publications, one slide presentation, and another publication to be published in April. The publications included marketing and financing analyses, a directory, bibliographies, training manual, quality control guidelines, a case history, and a pictorial monograph. A number of the publications resulted from staff field trips to developing countries. A major expansion of the International Development Data Center holdings occurred.

2.(a) Targets for Reporting Year and Means of Verification

<u>Target</u>	<u>Verification Means</u>
Industry studies (2)	Reports
Economic analysis	Report
International market potential analysis	Report
Expansion of "Guidelines for Industrial Extension Personnel"	Additional guidelines
Continued compilation and codification of small industry case histories	Expanded case history index
Comparative analysis of counterpart country financing programs	Report
Expansion of International Development Data Center holdings	New materials

(b) Critical Assumptions. The critical assumptions listed on page 6 remained valid insofar as the applied research and knowledge base are concerned. No untoward events outside the control of Georgia Tech occurred during the grant year to deter the execution of the planned activities.

3. Accomplishments

(a) Accumulative. During the first three years of the grant, the applied research activity resulted in the publication of three annual reports

Table 1

QUICK REFERENCE ACTIVITY PROFILE: GRANT YEAR THREE

<u>Planned Goals</u>	<u>Actual Results Achieved</u>	<u>Due Date if Goal Not Achieved in Grant Year Three</u>
Industry studies (2)	<p>"Directory of Consultants to Small Rural Industries," "Pictorial Monograph #1 - Selected Aspects of Intermediate Technology"</p> <div data-bbox="751 586 1388 683" style="border: 1px solid black; padding: 2px;"> <p>Additional unplanned product: A color slide presentation with taped commentary on intermediate technology</p> </div>	
Economic analysis	<p>"Finance and Small-Scale Industry Lending in the Philippines" (report)</p>	
International market potential analysis	<p>"Export Potentials of Selected Korean Industries" (report)</p>	
Expansion of "Guidelines for Industrial Extension Personnel"	<p>#14 - Fundamentals of Quality and Quality Control, #15 - Guidelines for Developing a Quality Control System</p>	
Expansion of International Development Data Center holdings	<p>Added 1,000 books, pamphlets, etc. Circulated 250 periodicals to 211(d) staff</p> <div data-bbox="751 1149 1388 1344" style="border: 1px solid black; padding: 2px;"> <p>Additional unplanned products: "Bibliography of International Development Publications" (at EDL), "Bibliography of Intermediate Technology Materials Held at the International Development Data Center" (at EDL)</p> </div>	
Continued compilation and codification of small industry case studies	<p>Continued compilation of case studies</p> <div data-bbox="751 1425 1388 1552" style="border: 1px solid black; padding: 2px;"> <p>Additional unplanned product: "Small-Scale Industry Development in South Santa Catarina, Brazil - A Case History" (report)</p> </div>	Publication in April 1976

Table 1 (continued)

<u>Planned Goals</u>	<u>Actual Results Achieved</u>	<u>Due Date if Goal Not Achieved in Grant Year Three</u>
Comparative analysis of counter- part country financing program	"Financing Small-Scale Industry: The Tubarao, Brazil, Case" (report)	
Increase number of students in industrialization master's cur- riculum	Number now 10. Nine more students to be admitted in next three quarters. Thesis option added.	
Support of graduate program students as needed	Ten students supported with assistant- ships during grant year	
Presentation of new course in graduate program	Course material prepared	Course (Small Industry Projects) will be offered in fall of 1976
Development of new training program	Small industry training course being prepared	Field testing -- Nigeria,, summer 1976
	Additional unplanned product: "Inter- im Observations -- UP-ISSI Entrepre- neurship Development Program" (report)	
Six or more seminars by in- vited lecturers	Six seminars	
Participation in relevant con- ferences and seminars by staff	Staff participation in 14 conferences, seminars, and workshops	
Planning international devel- opment conference	Planning and program completed	Scheduled for May 26-29, 1976, Manila, Philippines
Counterpart linkage communi- cation	Average of twice monthly communication. Twenty-five individual field trips to counterparts by 16 individuals.	

Table 1 (continued)

<u>Planned Goals</u>	<u>Actual Results Achieved</u>	<u>Due Date if Goal Not Achieved in Grant Year Three</u>
Possible selection of additional counterpart	Addition of University of Science and Technology, Ghana, to network	
Communication with AID and other international organizations	Weekly contact with AID/Washington	
Two Internal Advisory Committee meetings	One held (all that was needed, due to excellent internal cooperation)	
One External Advisory Committee meeting	Held August 25-26, 1975, Atlanta	
Program staff coordination meetings	Four meetings held	
Schedule and receive program visitors	Seventy-one foreign observers and 85 from domestic and international development organizations visited program in Atlanta	

and 35 published reports, papers, newsletters, guidelines, monographs, and brochures on various subjects related to small-scale industry and to selected counterpart countries. An audiovisual slide and tape presentation also was produced. A complete listing of these publications and products can be found in Appendix I.

The International Development Data Center was established early in the first year. Since then, its data collection has been expanding on a continuing basis, and the IDDC staff has responded to inquiries from many countries of the world.

(b) Reporting Year. During the third grant year, the following 14 applied research items were produced as a result of staff field trips and Atlanta-based activity:

Analysis and Evaluation of Industrial Projects - A Seminar. A training program on the analysis and evaluation of industrial projects presented jointly with the Institute for Small-Scale Industries, University of the Philippines, Manila, in June 1975 (Robert Collier, David Clifton, David Fyffe -- authors). This course material is being utilized in the writing of a book with the same title to be published by John Wiley.

Finance and Small-Scale Industry Lending in the Philippines, 1967-1973. A review of small industry financing trends in the Philippines, based on a review of published literature and reviewed by various in-country organizations. (John Kaatz -- author).

Financing Small-Scale Industry: The Tubarao, Brazil, Case. The report is based on compilation of data and in-country interviews. (John Kaatz -- author.)

Export Potentials of Selected Korean Small-Scale Industries. This report results from a Korean field trip, interviews, and primary and secondary data. (Harvey Diamond -- author.)

Guideline #14 - Fundamentals of Quality and Quality Control. Addition to a series of international guidelines for industrial extension personnel. (Kenneth Stephens -- author.)

Guideline #15 - Guidelines for Developing a Quality Control System. Addition to a series of international guidelines for industrial extension personnel. (Kenneth Stephens -- author.)

Small-Scale Industry Development in South Santa Catarina, Brazil - A Case History. An analysis of factors impacting on small industry development in the Tubarao, Brazil, area and case studies of the development of five companies in that area. (Nelson Wall -- author.)

Pictorial Monograph #1 - Selected Aspects of Intermediate Technology. A review of selected aspects of intermediate technology illustrated with photographs drawn from the audiovisual files of the Economic Development Laboratory at Georgia Tech. This monograph focuses primarily on industrial appropriate technology. (Ross Hammond -- author.)

Interim Observations - UP-ISSI Entrepreneurship Development Program. A survey paper based on taped interviews with former participants in entrepreneur training at the Institute for Small-Scale Industries, University of the Philippines. (Ben James -- author.)

Bibliography of International Development Publications. An updated listing of international development publications produced by the staff of the Economic Development Laboratory. (Kay Auciello -- compiler.)

Bibliography of Intermediate Technology Materials Held at the International Development Data Center. A listing of IDDC's holdings related to the field of intermediate technology. (Kay Auciello -- compiler.)

The International Informer. A bimonthly listing of new acquisitions at IDDC. (Kay Auciello -- compiler.)

Directory of Consultants to Small Rural Industries. An international compilation of organizations and individuals with consulting experience in the field of small rural industry development. (Kay Auciello and Richard Johnston -- authors.)

Intermediate Technology. A color slide presentation and cassette tape commentary, citing intermediate technology characteristics, with examples from developed and developing countries. Available on loan from the Economic Development Laboratory.

In total, these items represent production greatly in excess of grant-year targets, even though target areas changed somewhat during the period.

The International Development Data Center staff, in addition to producing a number of the above-listed reports and bibliographies, increased the Center's holdings of reports, pamphlets, books, and directories about 50%, to approximately 3,000 such items. Serial publications received number 250.

PHILIPPINES



David Clifton of Georgia Tech makes a presentation to participants in a seminar conducted jointly by the University of the Philippines and the Georgia Institute of Technology in Manila, The Philippines.



Individual assistance to a seminar participant by a Georgia Tech instructor is an essential aspect of training.

IDDC materials are widely circulated to program staff members and to interested Tech faculty members and students, as well as to network counterpart organizations. Collection and codification of published small industry case histories is a continuing activity.

IDDC staff members responded to approximately 1,700 internally generated requests for information and technical assistance, although many of these related to overseas projects. In addition, about 725 requests from overseas organizations and international development organizations were received and answered by the IDDC staff and others in the Laboratory.

(c) Total Expenditures. Accumulative expenditures (three years) under the category of Applied Research and Knowledge Base totaled \$214,086, of which \$75,886 occurred in the third grant year.

B. Education and Training (25% of effort -- \$42,000)

1. Description. The major thrust of this activity has been to design, obtain approval of, and offer a graduate program in industrialization at the master's level. This has been achieved, and the program is housed in the School of Industrial and Systems Engineering. The curriculum draws from existing and new multidisciplinary courses. Spin-off short-term training programs are being developed and field-tested in developing countries.

2. (a) Targets for Reporting Year and Means of Verification

<u>Target</u>	<u>Verification Means</u>
Increase number of students in industrialization master's program to 12	Enrollment
Support of graduate program students as needed	Dollar support
Presentation of new course in graduate program	Presentation
Development of new training program	Training program package

(b) Critical Assumptions. No untoward circumstances have impeded the design and presentation of the graduate program. On-site testing of a training program in Nigeria was delayed once again. A change in government leadership at the time the test program was scheduled prevented the Georgia Tech staff from traveling to Nigeria.

3. Accomplishments

(a) Accumulative. To date, a new Master of Science curriculum has been designed, developed, approved, and presented in the School of Industrial and Systems Engineering. It has been publicized, and the initial enrollment of four students has increased to 10, with continued expansion expected.

(b) Reporting Year. The present enrollment in the graduate program on industrialization is 10 students (six of whom receive assistantships from 211(d) funds). In addition, nine more have been accepted for admission during 1976. The following breakdown of these 19 graduate students indicates a diversity of origins, from both developed and developing countries.

Colombia	1
Ecuador	2
Iran	1
Korea	3
Mexico	7
Nigeria	1
Peru	1
Philippines	1
United States	2

These students are listed by name in Appendix II.

A new graduate course, "Projects in Small Industry Development," has been prepared and will be presented in the fall of 1976.

A thesis option in the graduate program, not previously available, has received school faculty approval and other necessary approvals are expected.

A new one-week training program is being prepared for summer field-testing cooperatively with the University of Ife in Nigeria.

Approximately half the students enrolled in the graduate program have needed financial support to pursue their studies. Funds from the 211(d) grant are being utilized for this, and other sources of support are being explored in anticipation of the day when 211(d) grant funding expires.

In June 1975, a training program was field-tested cooperatively with the Institute for Small-Scale Industries, University of the Philippines, in Manila. This highly successful program was the basis for a published report (Report #1, listed on page 12).

GRADUATE PROGRAM



Graduate students from Colombia, Ecuador, and Mexico are among the participants in the master's program emphasizing industrialization which was developed under the AID 211(d) grant.



Graduate student Socorro Quintero greets fellow countrywoman Thelma Dua of the Philippine Department of Industry, who is touring Georgia Tech's International Development Data Center. During her visit, Miss Dua presented a seminar on the Department's extension activities.

Also during the year, training and internship programs in industrial extension were prepared for Soong Jun University personnel under the 211(d) grant. The actual training program presentation was done under the synergistic Small Industry Grant contract. This program took place during June and July 1975.

Education and training goals for the year were essentially met, except for delay in field-testing a training program in Nigeria, due to circumstances beyond Georgia Tech's control (see Critical Assumptions).

(c) Total Expenditures. Accumulative expenditures (three years) total \$91,429, of which \$47,429 was expended in the third grant year.

C. Conferences and Seminars (15% of effort -- \$27,000)

1. Description. The purpose of this activity is to expose Georgia Tech faculty members, staff, and students to international development activities of other organizations and the state of the art, and to promote understanding and communication with these organizations. In addition, the 211(d) program staff attends and participates in relevant small industry conferences, seminars, and workshops.

2.(a) Targets for Reporting Year and Means of Verification

<u>Target</u>	<u>Verification Means</u>
Six or more seminars by invited lecturers	Seminars
Participation in relevant conferences and seminars	Papers
Host international development seminar (request to AID approved to hold in Manila, May 1976)	

(b) Critical Assumptions. This activity was carried out as planned, with no external factors impacting.

3. Accomplishments

(a) Accumulative. Twenty-two formal and four informal seminars have been held at Georgia Tech in the three-year grant period as part of the 211(d) international development seminar series. Total attendance has approximated 700 persons, made up of Georgia Tech faculty and staff, students, and other interested participants.

CONFERENCES AND SEMINARS



Opening-day session of the International Development Conference on "Techniques and Methodologies for Stimulating Small-Scale, Labor-Intensive Industries in Developing Countries" held in March 1975 in Atlanta.



Ray Manoff of the Economic Development Laboratory staff with Dr. Medford Alexander, Inter-American Development Bank, a speaker for one of the International Development Seminar Series held at Georgia Tech.

In addition, 211(d) staff personnel have participated in a total of 40 domestic and international conferences, seminars, and workshops. Presentations were made at many of these meetings by the program-associated staff.

(b) Reporting Year. During the reporting year, six international development seminars were presented at Georgia, as listed in Table 2 on the next page.

These seminars were publicized on campus by means of posters, notices to faculty, and mailings to foreign students. A typical poster is included as Appendix III. Average attendance was 30+.

The 211(d) program staff participated in the following conferences, seminars, and workshops.

- Most of the staff attended an international development conference titled "Techniques and Methodologies for Stimulating Small-Scale Labor-Intensive Industries in Developing Countries" in Atlanta.
- Ross Hammond attended a conference at Cornell University on "Science and Technology Policy in the Developing Nations with Special Reference to the Industrial and Agricultural Sectors."
- Richard Johnston participated in and made a presentation at the Triad Planning Workshop at the East-West Center in Hawaii.
- A number of the staff participated in the AID TA/OST annual strategy symposium in Atlanta.
- Ross Hammond attended the ASEE International Division World Congress at Estes Park
- The Virginia State University conference on "Regional and International Economic Development and Planning" was attended by Ross Hammond.
- David Clifton, Robert Collier, and David Fyffe presented a seminar jointly with Tech's counterpart in Manila, the Institute for Small-Scale Industries.
- Dr. Thomas Stelson made, and Ross Hammond attended, solar energy presentations in the Philippines and Korea to multi-organizational audiences.
- Kay Auciello made a presentation to a graduate student seminar at Emory University.
- Ross Hammond presented an intermediate technology seminar at AID/Washington.
- In Tubarao, Brazil, John Kaatz presented a small industry financing seminar to local and regional bankers.
- Ross Hammond attended a presentation by E. F. Schumacher at an AID intermediate technology committee meeting.

Table 2

INTERNATIONAL DEVELOPMENT SEMINAR SERIES
Atlanta - Grant Year Three

<u>No.</u>	<u>Date</u>	<u>Lecturer</u>	<u>Title of Seminar</u>
18	April 18, 1975	Dr. Loretta Fairchild Cornell University Ithaca, New York	A Comparison of Foreign and Domestic Firms in Monterrey, Mexico - Performance and Sources of Technology
19	Aug. 13, 1975	Dr. H. E. Hoelscher College of Engineering University of Pittsburgh Pittsburgh, Pennsylvania	An Analysis of an Industrial System in a Developing Country
20	July 29, 1975	Fred Burian TDI, East-West Center Honolulu, Hawaii	Audiovisual Techniques for Project Documentation
21	Nov. 6, 1975	Sonia Tiong-Aquino Institute for Small-Scale Industries University of the Philippines Quezon City, Philippines	Advisory Services for Small-Scale Industry in a Developing Country
22	Dec. 2, 1975	Dr. Medford Alexander Inter-American Development Bank Washington, D. C.	Development Agencies and Technology Adaptation
23	Dec. 7, 1975	Thelma Dua Department of Industry Manila, Philippines	The Small Business Advisory Center Program in the Philippines

- The midwinter meeting of the ASEE International Division in New Orleans was attended by Ross Hammond.
- Ross Hammond made a presentation on intermediate technology and the Economic Development Laboratory at the National Academy of Science.

(c) Total Expenditures. Three-year expenditures for conference and seminar activity totaled \$49,557, of which \$28,457 was expended in the third grant year.

D. Counterpart Linkages (10% of effort -- \$17,000)

1. Description. The primary goal of the 211(d) grant to Georgia Tech is to strengthen the institution's capability to successfully stimulate small industry development in developing countries, building on the existing experience base at Georgia Tech. The grant called for a linkage with at least four overseas counterpart organizations in order to facilitate the achievement of the 211(d) primary goal. As a result of an extensive screening effort in the first grant year, five formal interaction agreements and one informal agreement were reached with counterpart organizations in Asia, Africa, and Latin America. These organizations are the principal communication and linkage elements in the program. They serve as vehicles for the transmittal of information and technology, provide knowledge of their countries' small industry environment, facilitate program staff interactions, and provide in-country bases for research related to small industry development.

These counterpart organizations, along with Georgia Tech, now compose a linkage network with a common interest in the development of the small industry sector in their respective countries. Basic information on the network is shown in Table 3 on the next page.

2.(a) Targets for Reporting Year and Means of Verification

<u>Target</u>	<u>Verification Means</u>
Frequent communication with counterparts	Files
Possible selection of additional counterpart	New counterpart

(b) Critical Assumptions. No outside events had an adverse effect on the counterpart linkages. Communication was maintained with all counterparts, and all have agreed to be present at the Manila conference scheduled for

Table 3
1976 MEMBER ORGANIZATIONS - SMALL-SCALE INDUSTRY NETWORK

<u>Organization Name and Address</u>	<u>Principal Contacts</u>	<u>Cooperative Agreement in Force</u>	<u>Type of Organization</u>	<u>Major Interests and Activities in Small Industry Area</u>	<u>Basis of Relationship with Georgia Tech</u>	<u>Comments and Additional Data</u>
Centro de Desarrollo Industrial del Ecuador (CENDES) Casilla Postal 2321 Quito, Ecuador Cable: CENDES	Econ. Marcelo Avila Orejuela, Executive Director	Yes	National Industrial Development Center Part of Ministry of Commerce and Industry Staff - 100+	Industrial research Management and technical assistance Market analysis Government industrial development plan implementation	211(d) counterpart	Regional office in Guayaquil. 100+ published reports. Field office in Cuenca.
Fundacao Educacional do Sul de Santa Catarina Caixa Postal 370 Tubarao, Santa Catarina Brazil	Prof. Osvaldo dela Giustina Prof. Jose Muller	Yes	State educational institution and research unit Staff - 50+ Students - 2,500+	Industrial research Community development Regional research and development	211(d) counterpart Small industry project	Relatively new organization closely related to area industry. Major interest in coal found in area.
Georgia Institute of Technology Atlanta, Georgia 30332, U. S. A. Cable: ENGEXPSTAT, Atlanta	Ross W. Hammond, Chief, Industrial Development Division (IDD) Nelson C. Wall	Yes	State educational institution and Engineering Experiment Station Students - 10,000	Industrial development Resource development Community development Industrial extension International development		Major IDD functions: applied research, service, training, and technology transfer oriented to employment generation
Industrial Research and Development Unit (IRDU) University of Ife Ile-Ife, Nigeria Cable: IFEVARSITY, Ile-Ife	Prof. Sam A. Aluko, Head, Ind. Res. & Dev. Unit (IRDU) Dr. A. O. Lewis, Acting Head	Yes	Technological university IRDU staff - 20 Students - 4,000	Industrial research Small industry surveys Management assistance Economic development	211(d) counterpart	IRDU has interviewed 30,000 household and small industries and analyzed these primary data in a series of reports. Two field offices have been opened.
Kenya Industrial Estates, Ltd. P. O. Box 18282 Likoni Road Nairobi, Kenya Cable: NAINDEST	Mr. K. A. Ng'eny, General Manager Mr. B.I.O. Ayoro, Prog. Mgr., Rural Ind. Dev. Program	-	Part of Industrial and Commercial Development Corp. (ICDC) Staff - 75	Industrial estate development Rural industrial development Management and technical assistance Financial assistance (ICDC)	Informal working relationship	Several industrial estates in being or planned. Several rural industrial development centers are operational.
Soong Jun University 135 Sang-Do Dong Seoul 150, Korea	Dr. H. B. Lee, President Dr. Y. B. Ouh, Integrated Dev. Center	Yes	Two-campus private university Staff - 50 Students - 2,100	Industrial extension Regional development Entrepreneurship development Technology transfer	211(d) counterpart Small industry project	Initiated an Integrated Development Center, a Science Research Institute, a Regional Development Institute, and an Industrial Technology Institute.
Institute for Small-Scale Industries University of Philippines Virata Hall, Diliman Quezon City, D505 Philippines	Dr. Leon V. Chico, Director	Yes	Institute associated with the University of the Philippines Staff - 70	Industrial training Management consultancy Industrial technology Industrial extension Industrial research	211(d) counterpart	Heavy emphasis on industrial training programs and seminars. Establishing (1974) five regional centers. Industrial technology activity expanding.
Technology Consultancy Centre University of Science and Technology Kumasi, Ghana	Dr. John Powell, Director	Yes	Unit of major Ghanaian university	Prototype industry development Management assistance	211(d) counterpart	Unique generation of new industrial enterprises, training of staffs, and spin-off of industries.

KOREA



Mechanized sanding (an improvement over original hand sanding) at Yong Jak Fishing Pole Factory and appropriate technology dust removal system.



Improved method of paint coating at Yong Jak Fishing Pole Factory, eliminating brush painting and greatly increasing painting productivity.

May 1976. The majority of interactions occurred with those counterparts with which additional activities had developed.

3. Accomplishments

(a) Accumulative. A total of eight organizations (including Georgia Tech) now comprise the small industry network. Contacts on a monthly average basis are maintained with most counterparts. A considerable interchange of personnel on field trips has occurred in the network.

The flow of information from and to Georgia Tech through interchange of correspondence, reports, and newsletters has been frequent.

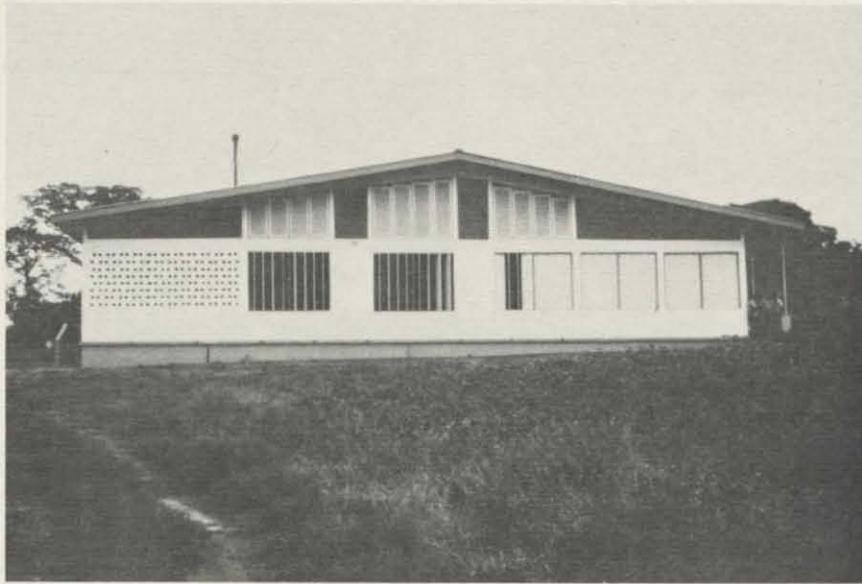
A three-year total of 54 field trips have been made to counterpart countries by 211(d) program staff. This resulted in much interchange of information and a large proportion of the published reports under the program. Personnel from six counterpart organizations visited Georgia Tech for conferences, symposia, orientation, or other purposes under the 211(d) synergistic programs. These interactions have greatly assisted in the development of working relationships.

(b) Reporting Year. During the year, a seventh counterpart joined the network, the Technology Consultancy Center (TCC) at the University of Science and Technology, Kumasi, Ghana. TCC has taken some innovative approaches to rural small industry development in the establishment of small resource-oriented industries and the spin-off of these to interested entrepreneurs, resulting in new enterprises and employment generation.

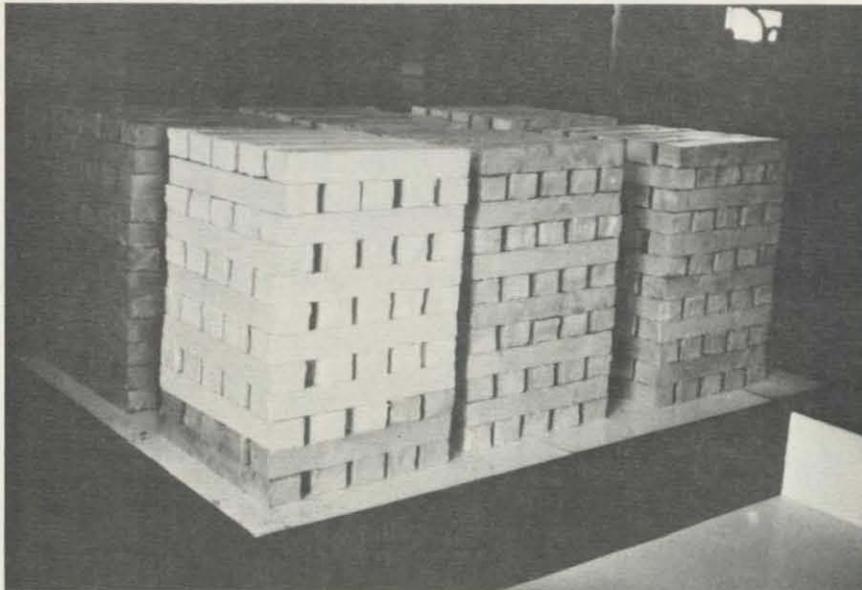
Communication with all counterparts has been maintained, involving on-site field trips at counterpart locations, field trips to Atlanta by counterpart personnel, interchange of reports and information, response to specific requests for assistance (separately funded), and correspondence. To the maximum extent possible, counterpart organizations are involved as participants in proposals generated for consideration by various sponsoring agencies.

During the third grant year, 25 individual field trips were made by 16 different 211(d) program staff members. These trips varied in duration from one to five weeks. The shorter field trips involved staff orientation and counterpart familiarization or administrative review of activity. The longer trips involved data collection and research report preparation or the field-testing of training programs.

GHANA



First industrial building designed and built by the University of Science and Technology in Ghana. It now houses a soap plant, operated by the Technology Consultancy Center, a Georgia Tech counterpart.



Bars of soap produced in the plant. The University actively encourages the development of rural small industry by starting enterprises, training plant personnel, and selling these operations to interested entrepreneurs.

GHANA



Dr. John Powell, Dr. Ben Ntim, and a soap plant employee discuss the day's events and progress in bringing the plant on-stream.



A view along Carpenter's Row in Kumasi, Ghana, where many woodworking activities are centralized. The waste wood and sawdust resulting from these operations can be pyrolytically converted to energy sources.

Counterpart staff personnel from all but one counterpart, Kenya Industrial Estates, visited Atlanta during the grant year.

(c) Total Expenditures. Three-year accumulated expenditures under the category of Counterpart Linkages totaled \$96,871, of which \$18,971 occurred in the third year.

E. Administration and Coordination (10% of effort -- \$18,000)

1. Description. Because of the interdisciplinary nature of the Georgia Tech program, which involves personnel of four separate organizational units of the institution and staff of seven counterparts, planning, scheduling, and coordination of activities is an important function. Elements within this Administration and Coordination function are program planning and scheduling, overseas assignments, day-to-day operations and recordkeeping, internal and external communications, coordination and advisory meetings, and reception of foreign observers of the program.

2. (a) Targets for Reporting Year and Means of Verification

<u>Target</u>	<u>Verification Means</u>
Planning and coordination, internal	Annual report
Communication with AID and other organizations	Files
Internal Advisory Committee meeting	Meeting
External Advisory Committee meeting	Meeting
Program staff coordination meetings	Meetings
Schedule visits and receive foreign visitors	Visits

(b) Critical Assumptions. Not applicable.

3. Accomplishments

(a) Accumulative. Since the initiation of the grant three years ago, annual goals have been met as follows:

(1) Continual project planning and coordination have been carried on.

(2) Frequent communication has been maintained with the sponsor, counterpart organizations, and international development organizations.

(3) Five Internal Advisory Committee meetings and three External Advisory Committee meetings have been held.

(4) Thirty-seven program staff coordination meetings have been held.

(5) One 18-month AID review of the program was implemented.

(6) Seventy-one foreign visitors and 86 development organization staff members came to Atlanta for varying periods of time and were given program reviews.

(b) Reporting Year. During the reporting year, the following activities took place under the category of Administration and Coordination:

(1) Third grant year project planning and coordination efforts approximated those in Grant Year Two.

(2) Grant Year Two level of communications were maintained during the third grant year. Only four internal staff coordination meetings were necessary, since staff personnel were thoroughly familiar with the program and staff assignments.

(3) Excellent cooperation from the administrative heads of Tech units participating in the 211(d) program obviated the necessity to hold more than one Internal Advisory Committee meeting in which the third-year activities were reviewed. The annual External Advisory Committee meeting was held on August 25-26 and was well attended.

(4) Noteworthy was the increase in foreign visitors to Georgia Tech who were exposed to the 211(d) program during the grant year. In some cases, these visitors came to Georgia Tech under other AID-funded programs which resulted directly or indirectly from the 211(d) grant. A total of 71 foreign observers came to review the program during the year, an increase of 58% over the preceding grant year. In addition, 85 representatives of international development organizations were exposed to the program while visiting Georgia Tech.

(c) Total Expenditures. The three-year expenditures for Administration and Coordination have amounted to \$49,971, of which \$18,971 occurred in the reporting year.

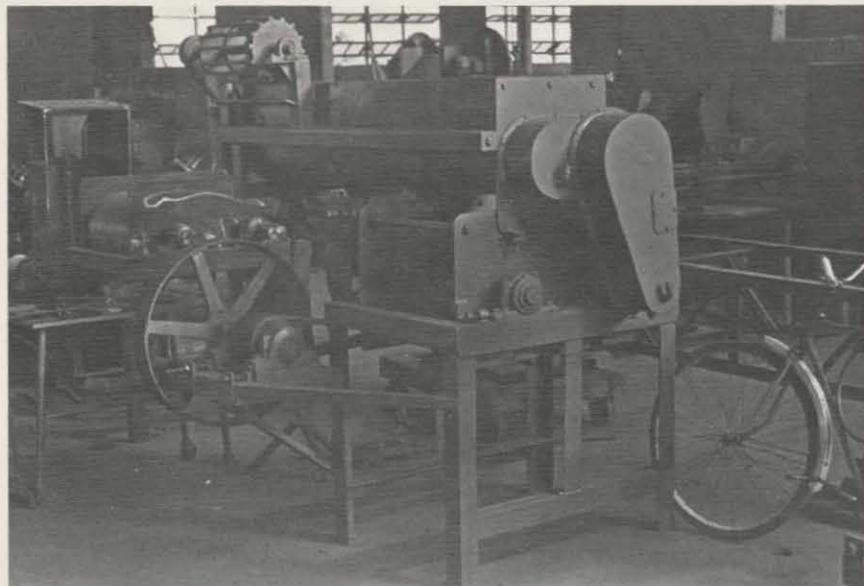
V. IMPACT OF GRANT-SUPPORTED ACTIVITIES IN ACHIEVING GRANT OBJECTIVE

During the third grant year, the interdisciplinary 211(d) program involved personnel of three major units of the institution: The Economic Development Laboratory (formerly the Industrial Development Division), the School of Industrial and Systems Engineering, and the College of Industrial Management.

BRAZIL

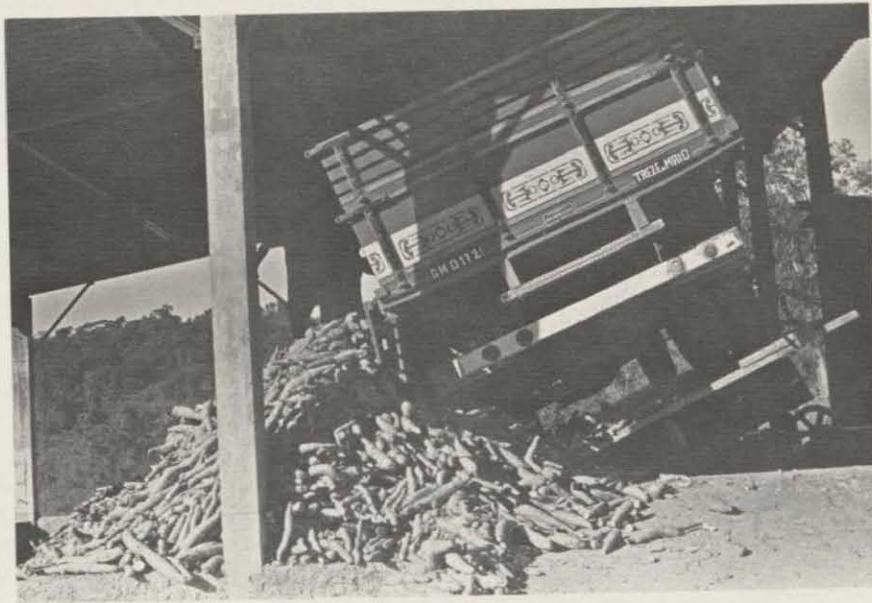


Interior of a new metal foundry established in 1975 in Tubarão, Brazil.



Pug mill equipment being produced in a Tubarão, Brazil, plant. Considerable technical assistance has been provided plant management by FESSC and Georgia Tech under a small industry grant.

BRAZIL



Unloading manioc at the receiving area of Agroindustria Ghisi & Cia. in the state of Santa Catarina.



New equipment for printing on plastic material in a plant which has received management and technical assistance under the program.

Southern Technical Institute was unable to participate because of increased enrollment and faculty work loads which prevented release of appropriate faculty members. It is hoped that this situation will ease in the future. A total of 20 faculty members and nine support staff members were involved in the program. This three-year activity has resulted in a total of 34 faculty members being involved in international development activities. Additionally, more graduate students were involved directly and a substantial number attended the international development seminar series.

By means of periodicals and newsletters, a large proportion of the Georgia Tech administration and faculty is kept informed of the program activities. The International Informer, a bibliography of material available in the International Development Data Center, was intended as an internal information publication, but its usefulness has brought numerous requests to receive it from outside the institution.

The Georgia Tech administration continues to exhibit great interest in the 211(d) grant activity. Various top administrators have made their time and efforts available, have accepted committee assignments, have assisted in the reception accorded foreign dignitaries, and have by all their actions supported the goals and substance of the program. During the third grant year, the Vice President for Research has directly interacted with program counterparts and government officials in Asia. It is anticipated that further evidences of administrative support will be forthcoming.

Awareness of the 211(d) program and the synergistic activities generated by it has expanded greatly among other organizations, resulting in program information requests and inquiries about direct assistance or technical information. The large increase in domestic and foreign visitors has been previously noted.

Because of administrative support and the free flow of program information, no problems in grant management and impact have been encountered to date.

Perhaps the most visible impact of the 211(d) grant is the continuing proliferation of grants and contracts for various small industry projects which has occurred during the reporting year. These are described in the next section.

VI. OTHER RESOURCES FOR GRANT-RELATED ACTIVITIES

A. Related Grants and Contracts. The 211(d) grant to Georgia Tech has led directly or indirectly to a number of funded activities with AID and other organizations.

(1) *Small Industry Grant Contract.* This AID-sponsored activity, initially involving the administration of grants to two counterpart institutions, has been expanded to four such organizations. Georgia Tech and the East-West Center (Hawaii) also provide small industry-related training and consultation activities to the counterparts under this program. The grants are intended to develop the industrial extension capabilities of the counterpart organizations. Annual funding for all elements is \$200,000.

(2) *Small Industry Development Network* (a quarterly newsletter). This free publication focuses on small industry development in the developing countries. It has been well received and is presently sent to some 1,500 organizations and individuals around the world. Two-year AID funding of this publication amounts to \$17,500.

(3) *Basic Ordering Agreement.* During the third grant year this agreement was utilized to provide problem-solving assistance for International Rice Research Institute (IRRI)-designed machinery in Ecuador. This short-term project funding was \$3,897.

(4) *Training for CONACYT (Mexico) Staff.* Five staff personnel of CONACYT received training in information systems for five weeks in Atlanta. This training will better equip the staff to respond to industrial inquiries and requests for technical information. Funding -- \$2,725.

(5) *International Development Conference/Seminar.* AID has funded a conference/seminar titled "Techniques and Methodologies for Stimulating Small-Scale Labor-Intensive Industries in Developing Countries." The meeting was held March 10 through March 14, 1975, in Atlanta. The conference attendance was approximately 120, and the seminar (by invitation only) was restricted to 20 participants, most of whom came from developing countries. AID and Georgia Tech funding amounted to \$30,000.

(6) *Science and Technology Symposium.* This annual AID TA/OST meeting was hosted by Georgia Tech. Approximately 50 developing and developed country

NIGERIA



Drs. Aluko, Oguntoye, and Lewis standing in front of the first industrial extension office of the University of Ife, part of an innovative approach to industrial development at the grass roots level.

HOTEL COMFORT			
400, IKERE RD. ADO-EKITI			
AFRICAN FOOD			
CASH No.	DESCRIPTION	RATE	#. K.
	POUNDED YAM & CHICKEN		
	POUNDED YAM-CORN MEAT		
	POUNDED YAM-BEEF MEAT		
	RICE & BUSH MEAT		
	EBA & CHICKEN		
	EBA & BUSH MEAT		
	EBA & CORN MEAT		
	AMALA & CHICKEN		
	AMALA & BUSH MEAT		
	AMALA & CORN MEAT		

Hotel menu at Ado-Ekiti, Nigeria, features native fare for the visitor and locals alike.

invitees discussed small industry development, energy and other development considerations. AID and Georgia Tech funding was \$30,000.

(7) *Team Review of NTIS Program.* Georgia Tech contributed a team member and a consultant to a review of the NTIS program in four Latin American countries. AID funding was \$10,170.

(8) *IRRI Rice Machinery Industrial Extension.* This is a two-year project to determine the market for IRRI rice machinery and to assist IRRI in accelerating the manufacture of selected rice machinery in Thailand and Pakistan. First-year funding -- \$55,000.

B. Georgia Tech Support for 211(d) and Associated Activities. In addition to having excellent administrative support and institution cooperation, the international development activities (in the Economic Development Laboratory) were supported during the grant year by \$35,550 of direct funds. Much of the backup staff support, expertise, and information sources developed in other programs also is supportive of the international development effort.

C. Possible Additional Future Involvements. Discussions are being conducted with various AID units relative to possible projects, including:

- o Pyrolytic conversion of wood wastes to energy sources -- Ghana
- o Field testing of the AID Battelle manually operated water pump
- o Post-harvest food loss systems analysis
- o Feasibility of the energy-food plantation concept
- o Post 211(d) evaluative mini-conferences

Discussions with government and private sector elements are being conducted with organizations in Korea, the Philippines, Venezuela, Nigeria, Peru, and Mexico.

Conversations have been held with the World Bank, the Inter-American Development Bank, the United Nations, the Organization of American States, and other international organizations relative to possible projects.

VII. UTILIZATION OF INSTITUTIONAL RESPONSE CAPABILITIES IN DEVELOPMENT PROGRAMS

Some of the following items have been mentioned previously. Because of the volume of requests for assistance and information, it is not feasible to keep an exact log of all of these inquiries. Correspondence and file data do

give a measure of this activity. The following table gives best estimates of information and assistance requests serviced during the grant year and the source of the inquiries.

<u>Users</u>	<u>Number of Requests or Inquiries</u>
Internal:	
EDL staff personnel	1,500
Other EES staff	50
Georgia Tech faculty	10
Georgia Tech students	<u>150</u>
	1,710
External:	
U.S. organizations/industries	75
Foreign organizations	300
Counterpart institutions:	
Information	50
Visits/inquiries	100
Report distribution	<u>200</u>
	725
Total	2,435

Tables II-A and III-B, under separate submission, list the major technical assistance responses made to requests.

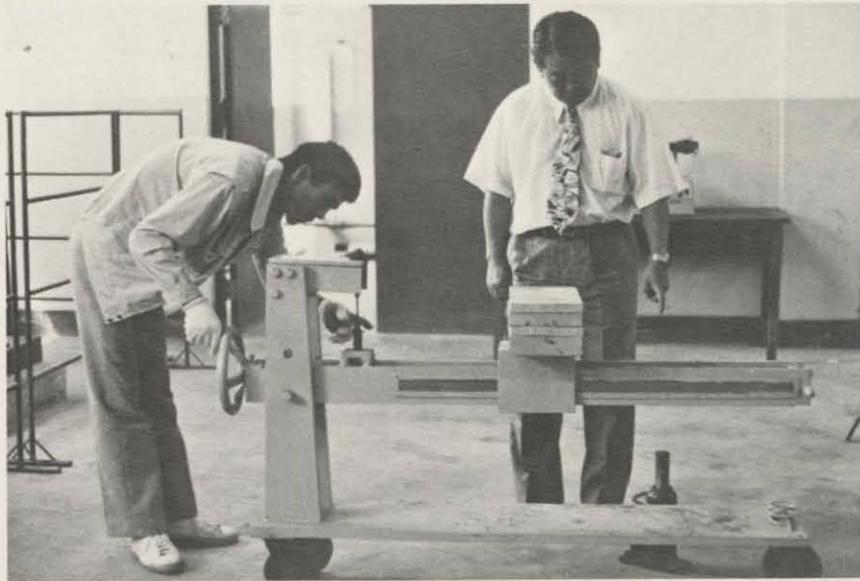
Nineteen graduate students have matriculated or been admitted to the Master of Science program with emphasis on industrialization. This program is 211(d)-funded. The students and countries of origin are listed in Appendix II.

A total of 71 foreign and 86 domestic or international development organization personnel have visited the campus in connection with the 211(d) and related programs.

Three hundred copies of research reports, training program packages, studies, directories, papers, etc., were distributed to organizations and individuals on request, in addition to normal distribution of materials to counterparts and sponsors.

Professional staff members and faculty of the Georgia Institute of Technology who have participated in substantial development activities under the

KOREA



Prof. Yoon of Soong Jun University keeps a watchful eye during a demonstration of the 1975 revised low-cost tensile strength tester developed at the University.



Edwina Udunka "mans" the camera during a videotaping segment at a Seoul, Korea, metalworking plant. Prof. Yoon Bae Ouh of Soong Jun University and Harvey Diamond of Georgia Tech interview the plant owner/manager.

211(d) grant or associated activities are listed in Table 4. (This does not include Tech faculty or staff involved in other unrelated international education or development activities.)

Plans for a continuing long-term activity in the international development field are being developed and pursued. These will involve continuing relationships with existing and new counterpart organizations, involvement of counterparts in Georgia Tech development contracts and grants, and continuance as a resource center for information and technical assistance. These activities are compatible with the institution's thrust in international education and development.

VIII. FOURTH-YEAR PLAN OF WORK AND ANTICIPATED EXPENDITURES

While experience has shown that circumstances encountered in the grant may modify initial goals for the year, the following targets and allocation of effort (total annual budget - \$170,000) are set forth:

	<u>Verification Means</u>
<u>Applied Research</u> (40% of effort -- \$68,000)	
o Industry profiles	Profiles
o Economic analysis	Report
o Expansion of "Guidelines for Industrial Extension Personnel"	Guidelines
o Pictorial monograph series	Monograph
o Expansion of International Development Data Center holdings	New materials
<u>Education and Training</u> (25% of effort -- \$42,500)	
o Increase number of students in industrialization program	Enrollment
o Support graduate students (6)	Dollar support
o Present new course in industrialization program	Presentation
o Test new training program on-site	Presentation
<u>Conferences and Seminars</u> (15% of effort -- \$25,500)	
o Six seminars by invited lecturers	Seminars
o Participation in relevant conferences and seminars	Papers
o International development mini-conference (Manila)	Conference
<u>Counterpart Linkages</u> (10% of effort -- \$17,000)	
o Frequent communication and visits	Files
o Involvement of counterparts in associated programs	Participation

Table 4
 PROFESSIONAL PERSONNEL WORKING ON
 211(d)-ASSOCIATED DEVELOPMENT PROGRAMS
 (Three-year period)

<u>Name</u>	<u>Title</u>
Kay E. Auciello	Assistant Research Scientist
Kong Chu	Professor
David E. Clifton	Research Scientist
Robert E. Collier	Senior Research Scientist
Ronald E. Cornman	Research Scientist
Vernon Crawford	Vice President for Academic Affairs
Martha Ann Deadmore	Research Scientist
Harvey Diamond	Senior Research Engineer
Sherman L. Dudley	Research Scientist
Larry R. Edens	Research Engineer
Herbert Eller	Professor
David E. Fyffe	Professor
Ross W. Hammond	Director, EDL/EES
Philip L. Hess	Research Engineer
Ben E. James, Jr.	Senior Research Scientist
Richard Johnston	Senior Research Scientist
John R. Kaatz	Professor
Frank Kingsland	Research Engineer
Jerry L. Lewis	Principal Research Scientist
Donald E. Lodge	Senior Research Scientist
C. Earl Logan	Senior Research Engineer
Raymond A. Manoff	Senior Research Scientist
George A. Morelos	Research Engineer
Edward A. Nelson, Jr.	Research Scientist
Gaston A. Parets	Research Engineer
Joseph M. Pettit	President, Georgia Institute of Technology
Phillip W. Potts	Research Scientist
Thomas E. Stelson	Vice President for Research
Kenneth S. Stephens	Professor
William T. Studstill	Research Engineer
Edwina W. Udunka	Assistant Research Scientist
Linda T. Wagenveld	Assistant Research Scientist
Nelson C. Wall	Senior Research Engineer
Charles C. Wommack	Research Scientist

Verification
Means

Administration and Coordination (10% of effort -- \$17,000)

o Planning, scheduling, and coordination	Annual report
o Communication with AID and other organizations	Files
o Internal Advisory Committee meetings as required	Meetings
o Annual External Advisory Committee meeting	July meeting
o Program coordination meetings as required	Meetings
o Schedule and receive foreign observers	Visits

IX. INVOLVEMENT OF MINORITY PERSONNEL AND WOMEN

During the third grant year, a substantial number of minority and female staff members have been involved in the 211(d) grant activities and in the associated international development programs. These persons are listed on the next page (Table 5).

Further involvement of minority and female staff persons in the 211(d) grant activity is expected.

X. OTHER

A. By-Product Activities. The 211(d) grant has been the catalyst for and genesis of a number of related programs and projects, including:

(1) Participation by Ross Hammond as a member of a National Academy of Science panel, "The Role of U.S. Engineering Schools in Foreign Assistance."

(2) A six-week display of rice machinery at the Engineering Experiment Station. This machinery, provided by AID and based on designs by the International Rice Research Institute (IRRI), was viewed by many persons and received considerable media publicity. Its presence coincided with the initiation of a subcontract with IRRI to provide assistance in the production of similar machinery in Thailand and Pakistan.

B. Impact of Institute Activities on Counterpart Planning and Projects.

(1) The Tech interaction with FESSC in Brazil in planning the establishment of a Minerals Laboratory has led to Brazilian government commitments to fund the laboratory.

(2) The small industry grant is permitting both the University of Ife in Nigeria and the Institute for Small-Scale Industries in the Philippines to initiate industrial extension field office systems.

Table 5

INVOLVEMENT OF MINORITIES AND FEMALES - GRANT YEAR III
(Georgia Tech 211(d) and Associated Programs)

<u>Name</u>	<u>Title</u>	<u>Origin</u>	<u>Sex</u>	<u>Nature of Involvement</u>
Auciello	Asst. Res. Sci.	-	F	International Development Data Center information scientist
Camp	Secretary	Spanish Am.	F	International Development Branch secretary
Carson	Secretary	-	F	Reports
Chung	Graduate Asst.	Korean	M	International Development Data Center -- research
Cole	Report Typist	-	F	Report typist
Correal	Student Asst.	Colombian	M	International Development Data Center -- research
Deadmore*	Res. Scientist	-	F	SIDN newsletter editor -- participates in 211(d) activity
Gochicoa	Graduate Asst.	Mexican	M	International Development Data Center -- research
Hurd	Clerk Typist	-	F	Processes program material
Jaramillo	Graduate Asst.	Colombian	M	International Development Data Center -- research
Lee	Graduate Asst.	Korean	M	International Development Data Center -- research
McHan	Secretary	-	F	Typed trip and research reports
Morelos*	Res. Scientist	Spanish Am.	M	Responsible for project implementation and industrial problem-solving
Ogba	Graduate Asst.	Nigerian	M	International Development Data Center -- research
Park	Graduate Asst.	Korean	M	International Development Data Center -- research
Parets*	Res. Engineer	Spanish Am.	M	Responsible for project implementation and problem solving
Quintero	Graduate Asst.	Filipina	F	International Development Data Center -- research
Seminario	Graduate Asst.	Peruvian	M	International Development Data Center -- research
Tarapanoff	Graduate Asst.	Brazilian	F	International Development Data Center -- research
Textor	Secretary	-	F	Assists in project administration and coordination
Thomas	Secretary	-	F	International Development Data Center secretary
Udunka*	Asst. Res. Sci.	Black	F	Audiovisual specialist
Villarreal	Graduate Asst.	Mexican	M	International Development Data Center -- research
Wall*	Sr. Res. Engr.	Spanish Am.	M	Responsible for project development, planning, implementation
Williams	Secretary	-	F	International Development Data Center secretary

*Involved in international travel under 211(d) or other associated programs in reporting year.

ECUADOR



Headquarters of the Centro de Desarrollo Industrial del Ecuador in Quito. CENDES is part of Georgia Tech's 211(d) counterpart network.

KENYA



African craft shops in the industrial estate in Nairobi developed by Kenya Industrial Estates, Ltd. KIE has developed industrial estates and rural industrial development centers in several Kenya locations.

(3) The Technology Consultancy Center at the University of Science and Technology in Ghana will participate in a feasibility study on pyrolytic conversion of agricultural wastes.

(4) A number of counterpart organizations have been successful in generating outside sources of funding, in part due to the small industry operations being carried out by these organizations.

Appendix I
ACCUMULATIVE LIST OF PUBLISHED MATERIALS PRODUCED UNDER
THE GEORGIA TECH 211(d) PROGRAM

ACCUMULATIVE LIST OF PUBLISHED MATERIALS PRODUCED UNDER
THE GEORGIA TECH 211(d) PROGRAM

<u>Report Title</u>	<u>Nature of Publication</u>	<u>Distribution</u>
1. Case History -- Small-Scale Industry Development in Paraguay (February 1974).	Report	General
2. List of Subject Headings Used by the International Development Data Center (February 1974)	Report	General
3. An Educational Program with Emphasis on Industrialization Leading to the Degree of Master of Science	Report	General
4. Employment Generation through Stimulation of Small-Scale Industry	Brochures (2)	General
5. An Overview of the Development and Current Operations of the Industrial Development Division	Paper	General
6. Technology Transfer Systems for Small Industries	Paper	General
7. Staff Travel Information (undated)	Report	Internal only
8. Benefits and Problems Associated with University-Industry Interaction - A Case History	Paper	General
9. First Annual Report - 211(d) Grant Year (February 23, 1973-February 22, 1974)	Report	General
10. The Promotion of Industrial Development in Ecuador (August 1974)	Report	Internal only
11. The Prospect for Economic Development in Nigeria (April 1974)	Report	Internal only
12. The International Informer	Bimonthly newsletter	Internal and limited external
13. A Comparative View of Technology Transfer	Paper	General
14. Curricula Research and Development (Korea, July 1974)	Report	General
15. Guide to International Statistical Sources and National Development Plans at the International Development Data Center (October 1974)	Report	General
16. Some Issues Related to the Impact of Micro-Development Projects	Paper	General

ACCUMULATIVE LIST OF PUBLISHED MATERIALS PRODUCED UNDER
THE GEORGIA TECH 211(d) PROGRAM
(continued)

	<u>Report Title</u>	<u>Nature of Publication</u>	<u>Distribution</u>
17.	Guidelines for Industrial Extension Personnel (November 1974)	13 Guideline papers	General
18.	Improving the Productivity of a Small Industry in Rural Korea (December 1974)	Report	General
19.	An International Compilation of Small-Scale Industry Definitions (January 1975)	Report	General
20.	Provisional Keyword Index of the Small-Scale Industry Case Studies (February 1975)	Report	General
21.	Small-Scale Industry Development in Ecuador - A Case History (April 1975)	Report	General
22.	Second Annual Report - 211(d) Grant Year (February 23, 1974-February 22, 1975)	Report	General
23.	A Seven-Country Survey of Certification Licensing and Quality Marks Programs (March 1975)	Report	General
24.	Analysis and Evaluation of Industrial Projects - A Seminar (June 1975)	Report	General
25.	Directory of Consultants to Small Rural Industries	Report	General
26.	Bibliography of International Development Publications (December 1975)	Bibliography	General
27.	Industrial Extension Personnel Guideline #14 - Fundamentals of Quality and Quality Control (February 1976)	Guideline paper	General
28.	Industrial Extension Personnel Guideline #15 - Guidelines for Developing a Quality Control System (February 1976)	Guideline paper	General
29.	Third Annual Report - 211(d) Grant Year (February 23, 1975-February 22, 1976)	Report	General
30.	Financing Small-Scale Industry: The Tubarao, Brazil, Case (January 1976)	Report	General

ACCUMULATIVE LIST OF PUBLISHED MATERIALS PRODUCED UNDER
 THE GEORGIA TECH 211(d) PROGRAM
 (continued)

	<u>Report Title</u>	<u>Nature of Publication</u>	<u>Distribution</u>
31.	Export Potentials of Selected Korean Small-Scale Industries (January 1976)	Report	General
32.	Finance and Small-Scale Industry Lending in the Philippines, 1967-1973 (February 1976)	Report	General
33.	Pictorial Monograph #1 - Selected Aspects of Intermediate Technology (March 1976)	Monograph	General
34.	Interim Observations - UP-ISSI Entrepreneurship Development Program (March 1976)	Report	General
35.	Small-Scale Industry Development in South Santa Catarina, Brazil - A Case History (Publication in April 1976)	Report	General
36.	Bibliography of Intermediate Technology Materials Held at the International Development Data Center (April 1976)	Bibliography	General
37.	Intermediate Technology - A Color Slide Presentation and Cassette Tape Commentary (November 1975)	Slides and tape	General (available on loan)

Appendix II
STUDENTS IN MASTER'S PROGRAM
WITH EMPHASIS ON INDUSTRIALIZATION

INDUSTRIALIZATION PROGRAM ENROLLMENT

The following is a listing by quarters of students who have matriculated and those who have been admitted to the Master of Science program with emphasis on industrialization.

Fall 1974

Arguelles, Jorge (Mexico)
Gochicoa, Gerardo* (Mexico)
Quezada, Antonio (Ecuador)

Winter 1975

None

Spring 1975

None

Fall 1975

Chung, Soo C.* (Korea)
Lee, Jang Y.* (Korea)
Park, Choon Y.* (Korea)
Quintero, Socorro M.* (Philippines)
Batterman, Charles (U.S.)

Winter 1976

Ogba, Onyekwere* (Nigeria)
Givetash, Hamid (Iran)

Spring 1976

Julio Cesar Hidalgo (Ecuador)

Summer 1976

Guardia, Jose G. (U.S.)
Sanchez, Jose L. (Mexico)

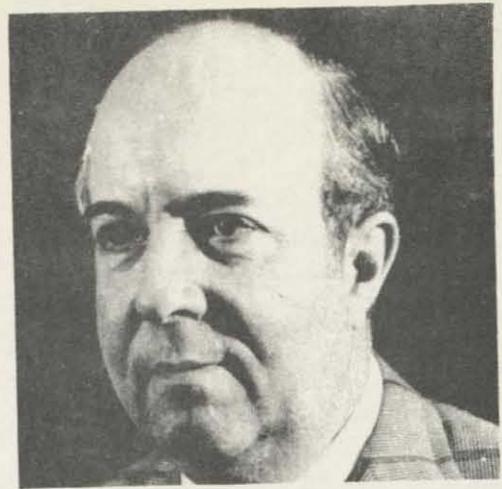
Fall 1976

Galan, Juan D. (Colombia)
Lopez, Ricardo R. (Mexico)
Saldivar, Ricardo E. (Mexico)
Slochowski, Nathan (Peru)
Velasco, Oscar (Mexico)
Ramirez, Federico A. (Mexico)

*Provided with assistantships with 211(d) funds.

Appendix III
SAMPLE SEMINAR POSTERS

INTERNATIONAL DEVELOPMENT SEMINAR SERIES



SEMINAR NO. 20

**2:00 pm, Wednesday, August 13 Room 303 (Auditorium)
ENGINEERING EXPERIMENT STATION (957 DALNEY ST.)**

An Analysis of An Industrial System in a Developing Country

**Dr H. E. Hoelscher
College of Engineering
University of Pittsburgh
Pittsburgh, Pa.**

**SPONSORED BY: GEORGIA TECH PROGRAM OF EMPLOYMENT
GENERATION THROUGH STIMULATION OF
SMALL SCALE INDUSTRY (IN THE DEVELOPING
COUNTRIES).**

PROGRAM FUNDED BY THE AGENCY FOR INTERNATIONAL DEVELOPMENT

INTERNATIONAL DEVELOPMENT SEMINAR SERIES



SEMINAR NO. 22

2:00 pm, Thursday, Nov. 6

Room 303 (Auditorium)

ENGINEERING EXPERIMENT STATION (957 DALNEY ST.)

Advisory Services for Small Scale Industry in a Developing Country

**Sonia Tiong-Aquino
Institute for Small Scale Industries
University of Philippines
Quezon City, Philippines**

**SPONSORED BY: GEORGIA TECH PROGRAM OF EMPLOYMENT
GENERATION THROUGH STIMULATION OF
SMALL SCALE INDUSTRY (IN THE DEVELOPING
COUNTRIES).**

PROGRAM FUNDED BY THE AGENCY FOR INTERNATIONAL DEVELOPMENT

INTERNATIONAL DEVELOPMENT SEMINAR SERIES



SEMINAR NO. 23

2:00 pm, Tuesday, Dec. 2

Room 303 (Auditorium)

ENGINEERING EXPERIMENT STATION (957 DALNEY ST.)

Development Agencies and Technology Adaptation

**Dr. Medford Alexander
Senior Economist**

**Inter-American Development Bank
Washington, D. C.**

**SPONSORED BY: GEORGIA TECH PROGRAM OF EMPLOYMENT
GENERATION THROUGH STIMULATION OF
SMALL SCALE INDUSTRY (IN THE DEVELOPING
COUNTRIES).**

PROGRAM FUNDED BY THE AGENCY FOR INTERNATIONAL DEVELOPMENT